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MANARUA MEMOIRS

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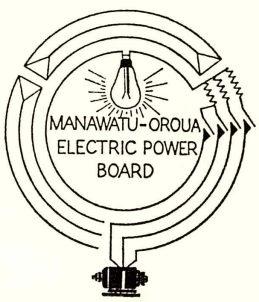


A SHORT HISTORY OF
THE MANAWATU-OROUA ELECTRIC POWER BOARD
1920-1972

by J. W. CLEVELY

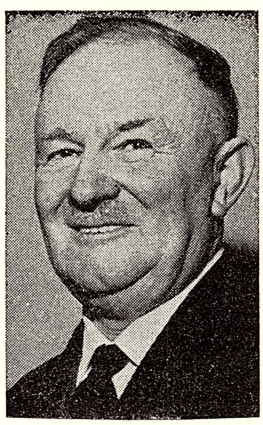
AUTHOR'S NOTE

It is not possible in a history of this size to record all the happenings of the Board. If all were recorded the reading of this history could possibly become a duty to be performed. This I have endeavoured to avoid.

Frequently certain people deplore the fact that much of the history of this land is not recorded. The inevitable passing of our pioneers means that their knowledge and recollections are often lost permanently. This short history has been written in an endeavour to stop this happening as far as this Board is concerned.

A history cannot be compiled without assistance from many people. This has been willingly given. I wish to thank the Board's present Chairman, its members, the staff both past and present for the help I have received from them and, to Rex Monigatti, a special word of thanks for his valuable assistance in the revision of this publication.

JIM CLEVELY.



The Author
J. W. CLEVELY, J.P.

Published by
THE MANAWATU-OROUA ELECTRIC POWER BOARD
Printed by
STYLEX PRINT LTD., PALMERSTON NORTH

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FOREWORD

This brief history tells the story of the development of power in the Manawatu-Oroua district since the Board was constituted on November 29, 1921. It depicts a past crowned with achievement. It reviews 50 years of careful planning and execution of projects designed to ensure an adequate supply of power to meet the ever-increasing demand of consumers. It contains a tribute to some of the outstanding personalities who shaped its course and established a firm foundation for the future.

We gratefully acknowledge the contribution made by Mr. J. W. Clevely, Area Engineer, Feilding, who, after much research, extracted the material used in this publication. Mr. Clevely retired on December 31, 1971, after 48½ years' service and his long association with the Board and intimate knowledge of its engineering activities made him ideally fitted for this task.

I record a sincere appreciation to Board members and staff, both past and present, our pioneer consumers and the many people who have been associated with the electrical industry over the years, all of whom have contributed to the growth and development of the Board during this period.

R. G. LINKLATER,
Chairman.

30 July, 1973.

1

THE EARLY YEARS

The Manawatu-Oroua Electric Power Board, which today serves part of the city of Palmerston North, the borough of Feilding, the counties of Kairanga, Kiwitea, Pohangina, Oroua and all but a small portion of the Manawatu County had a rather stormy birth. The total area is 1,301 square miles, of which seven square miles are in Palmerston North City area of supply.

Owing to the strong views held in certain areas, it was the original intention of various interests to set up a separate Board for the borough of Feilding and portions only of the adjacent counties of Oroua, Pohangina and Manawatu, and for the Board to be known as the Oroua Electric Power Board. The proposed Oroua Board had its origin at a meeting called by the Oroua County Council at Feilding on September 10, 1920, for the purpose of electing a Provisional Committee to go into the matter of forming a Hydro Electric Power Board. It is interesting to note that speakers at that early meeting were of the opinion that in years to come sufficient power for the needs of the proposed Board would not be obtained from the Mangahao scheme alone. They advocated the inclusion of the Rangitikei County in the area to be supplied. It was stated that engineers were then working on a hydro scheme in the proposed Wanganui-Rangitikei Electric Power Board's area and it was thought possible that the power supply could be supplemented from there. But in any case it was felt that the Wanganui scheme would be in operation first, and if the Rangitikei County were in their area, Oroua would have a certain right to obtain power from the Wanganui scheme.

A further meeting was held at Feilding six weeks later when a proposal to form a Board to consist of the Feilding Borough and the Oroua, Kiwitea and Pohangina counties was considered. On December 10, 1920, a provisional Oroua Electric Power Board Committee was set up with the then mayor of Feilding, Mr. G. J. Harford as chairman, the borough electrical engineer Mr. L. Hubbard as engineer-secretary, and Mr. Z. McLeod, an electrician employed by the Council, as canvasser.

During this period the Palmerston North Borough Council and the Kairanga County were proposing to set up a separate Power Board, but as the then Minister of Public Works, Mr. J. G. Coates, was not in favour of numerous small supply authorities, a meeting at which he was chairman was held in Feilding on June 27, 1921, in an endeavour to get all interested parties to form one large Board. Delegates representing all the interested counties and

boroughs attended this meeting and immediately the vexed question of the numbers of representatives to be allotted on the suggested Board to each local body came up and was thrashed out.

After a fairly stormy meeting, agreement was reached to form one large Power Board, the provisional representation being three each for Palmerston North, Kairanga and Manawatu, and two each for Feilding, Kiwitea, Oroua and Pohangina.

Petitions were then circulated, the required numbers of signatures of ratepayers obtained from each constituent district, and the "Board" was formed. The provisional Board was then set up with each local authority appointing its own representatives.

At the first meeting of this provisional Board, held on July 29, 1921, and presided over by J. A. Nash of Palmerston North with J. R. Hardie, town clerk of Palmerston North, as acting secretary, it was decided to call the supply area the Manawatu-Oroua Electric Power Board. The Board was formally constituted on November 29, 1921.

In January 1922 the following members were elected: J. A. Nash, M. A. Elliott, S. R. Lancaster (Palmerston North borough); G. J. Harford (Feilding borough); F. Arbon (Pohangina County); P. J. Small, J. Linklater (Kairanga County); Sir James Wilson and H. H. Hunt (Manawatu County); L. T. McLean (Kiwitea County); J. H. Vincent, J. Morrison (Oroua County). J. R. Hardie, town clerk of Palmerston North, was appointed provisional secretary.

At the first meeting of the Board held in February 1922, it was decided to call applications for an engineer. W. A. Waters was the successful applicant and he was appointed to the position the following month. He continued to serve as Chief Engineer until 1945. Temporary office accommodation was immediately secured in H. L. Young's Building, Broadway, Palmerston North, and investigations were carried out with a view to obtaining permanent office quarters. A surveyor, L. F. Row (afterwards city engineer for Wanganui), was engaged, and work started on the estimate for a comprehensive scheme to supply the area. This estimate was adopted by the Board, and it was decided to take a poll for a loan of £500,000, which was the estimated cost of the scheme. This cost included an amount of £50,000 to be used to finance consumers' installations. At a series of meetings in different parts of the Board's area the chairman and engineer informed the public on the general layout of the Board and its power reticulation scheme, including its "financial assistance to consumer" proposal. The loan was submitted to the ratepayers, including those of the borough of Palmerston North who, although they were not direct consumers of the Board (the town having its own supply), were still in the Board's rateable area, and was carried by 1,144 votes to 96.

K. W. Eglinton was appointed secretary in October, 1922, and in that capacity and later as Managing Secretary he served the Board for 36 years.

About this time Mr. Harford resigned from the Board, Mr. J. S. Tingey being appointed in his place.

In June 1923 the office was transferred from its temporary premises of two rooms in Broadway to a two-storeyed building in the Square.

The original reticulation scheme for the area, as laid out by the Board's engineer, was to take supply from the State substation at Bunnythorpe at 11 kV, by means of a three-core underground cable with a load-carrying capacity of 4,500 kVA, into the Board's adjacent substation. From this central point ten 11 kV feeders radiated. Construction, which had been delayed by a shipping strike affecting the delivery of hardwood poles and other material, then started.

The distribution of electricity to the farming areas by the rural power boards was then in its infancy, and there was an argument with the Post and Telegraph Department over the possible interference which might affect the Department's lines if 11 kV were allowed to be paralleled in close proximity. The Board's engineer had decided, because of this, that he would run only his 11 kV to central points of the areas, and further reticulation would be at 3.3 kV. As a matter of fact, the 3.3 kV lines were of such capacity that they carried the load for a lengthy period and it was not until much later that the policy of converting them to 11 kV was vigorously pursued.

Construction proceeded, after being marred by a go-slow policy for a period, but firm handling of the situation, with the dismissal of most of the erection gangs, cleared the air, and several lines were then built by contract. Certain tactics, such as not sinking the poles deep enough (even after a ring had been painted on them to indicate ground level) and lesser evils, led to the abandonment of this method of erection, and the Board reverted to using its own gangs.

The first areas to be done were Bunnythorpe, Whakarongo, Kelvin Grove and Ashhurst. At Ashhurst, which was the home town of the Board's engineer, the Board departed from its usual reticulation by using squared poles. The other townships had to be content with the desapped round pole.

At this juncture, as power was not yet available from Mangahao, arrangements were made for a temporary supply from the Palmerston North generating station at Terrace End. Power was obtained at 3.3 kV over the two feeders which had been built by the Board to give supply to the borough. The original load was only lighting, and the peak on the evening of April 8, 1924, was 25 kW.

The Board's substation at Bunnythorpe was not completed, the feeder being tied together outside the substation, and the only protection on the lines being 3.3 kV fuses. This led to the first fatality. A prize Jersey bull was killed when a 3.3 kV line fell across a fence through which the bull had its head.

By this time the Board had several canvassers on the road. Its policy was to break up the districts being reticulated into blocks of about 30 homes, and then to call tenders. Firms competed for the work in a manner unknown today.

Although the Board's slogan was "Power for Farm, Home and Industry",

it was not until August 1924 that the first milking machine was converted to electric drive at Mr. Bennett's farm on Rangitikei Line, adjacent to Palmerston North. After this successful venture into the milking machine field, the rush started. The Board had put in a large order for a well-known make of motor, the idea being to supply this motor to the contractor doing the particular installation, who usually mounted it on a timber bracket in the corner of the shed, leaving the old oil engine on its mountings on the floor as a standby as the farmers did not yet have faith in the continuity of electric supply. The belt could be changed from one to the other if necessary. Mainly owing to the flat belt drive, and the fact that the motor generally used had a ring-oiled sleeve-bearing, there was considerable bearing trouble at first as the farmer would insist on a very tight belt. Hardly a day passed without a motor seizing up.

To speed the service line construction, and to cheapen the job to consumers, it was the Board's policy to use the consumers' own grown poles. Some of these were macrocarpas that had sprouted into sizeable trunks after topping, and others were fast-growing bluegums which often lasted but a few years and then gave trouble. The four wire three-phase services were run on a 3ft 6in cross-arm with only 9in spacing, and every time a strong wind blew, the staff had endless trouble in maintaining supply to the farmers' cowsheds. Gradually all these service cross-arms were changed to 5ft 6in and this has remained the standard.

By September 1924 the Bunnythorpe substation (with supply from Palmerston North in the meantime stepped up to 11 kV) was put into service, giving control over its feeder lines.

Rongotea, which once boasted a Town Board, had the distinction also of having one of the smallest electrical reticulation schemes in the country. Power generated by the local dairy factory supplied only 36 consumers, and in the whole of its reticulation there were but 77 poles. Power was supplied only in the evenings and on Monday afternoons, when the housewife was expected to do her ironing.

In June 1923 the chairman of the Manawatu-Oroua Board had suggested that a letter be written to the Rongotea Dairy Co., to see if they would be prepared to sell their electrical scheme to the Board. The factory replied that they were prepared to negotiate, and the Board decided to offer the sum of £700 for the complete scheme. The Rongotea Dairy Company's directors considered the proposal too low, and the Board then made a re-survey of the installation. As a result of this, they offered the sum of £766, made up as follows: reticulation £601, street lights £60, cost of service lines owned by factory £40.10.0d, and 43 switchboards £64.10.0d. This offer was conditional upon consumers purchasing the switchboards in their own premises at a cost of 30s each. Even in those days the Board had a keen appreciation of the value of the pound. The Rongotea scheme went out of existence when the transmission lines of the Board reached the township on December 1, 1924.

2

DIFFICULT DECADES (1924-44)

Feilding Borough is not listed among the electrical supply authorities of New Zealand, yet it can be counted as one of the pioneers in this field. The mayor, councillors and citizens of this small borough, at the turn of the century, stepped out into what was, to them, the unknown, when they prepared to embark upon the installation of an electrical lighting scheme. Their path, like that of many other pioneers, was not an easy one. They had good luck and bad luck, they experienced doubt and elation, they suffered breakdowns, they even had on occasion to impose restrictions or rationing; but above all they had faith. One might even suggest that the conception of electric light in 1906 required far more courage than the conception of the Auckland Harbour Bridge 50 years later. After all, bridges had been built for thousands of years, but electricity was at that time not out of its swaddling clothes.

When electricity started to come into its own, with the setting up of power boards, feeling in Feilding borough ran in the direction of the town retaining its own plant and reticulation. At a meeting of the borough council in July 1923, however, a letter was received from the Manawatu-Oroua Electric Power Board asking if the Council was prepared to sell its electrical undertaking. The Council decided to negotiate with the Board.

After prolonged negotiation during the early part of 1924 the Board purchased, for £41,700, the generating plant of two diesels with generators and a 150 h.p. suction-gas engine with a total capacity of 450 kW. The suction-gas engine had been purchased second-hand by the borough council from the Waihi Gold Mining Co. and was coupled direct to a 150 rev/min 100 kW single-phase generator.

The Feilding Borough had 1,150 consumers, and sold approximately 4,300 kilowatt-hours per month, with a monthly revenue of about £900, and an expenditure of approximately £500. Like most boroughs, it used the surplus to bolster up other accounts instead of reducing tariffs. The supply to the town was single-phase at 2,400 V with a secondary distribution of 230 V. The system was an all-insulated one, with both sides of the consumer's installation fused.

Upon completing the deal, the Board appointed a resident engineer, T. B. Merson, and commenced the job of converting the distribution to three-phase. This work involved the installation of longer poles, heavier cables and new transformers. In the old scheme, no service line fuses had been fitted, and all

transformers were isolated. In the new set-up, the transformers of larger size were paralleled, and protection was given to all services, which were also renewed. In many cases in the borough the service lines terminated on the iron ridge of the roof, the swan-neck insulators being screwed through the iron into the roof and the conduit flashed where it entered. Owing to the fact that there was no earth on the old system, and with the changeover to the Board's three-phase m.e.n. system, the wiring at the bellmouth often broke down and livened up the roof.

During this period of changeover to Government supply, a temporary 11 kV line was run into the power-house yard in Eyre Street and a bank of three 125 kVA 11,000/2,400 V transformers installed. On December 19, 1924, at 5.30 p.m. power was received from the Mangahao scheme at 11,000 V and the Board's lines to Feilding were enlivened. At midnight, the Feilding power-house was shut down and supply was transferred to Bunnythorpe. The power-house was not dismantled but was held as a standby, and as such it was brought into service during the summer of 1931 when a water shortage at Mangahao restricted the supply.

That was the one and only time it was thus used. Soon after this, dismantling started. The two 150 h.p. diesels were sold to the Government for use in Otago on irrigation schemes and the suction-gas engine was wrecked and sold as scrap.

During this period it was the Board's policy to give supply to the many side roads and small areas that the main feeder lines had by-passed. The Kimbolton feeder was built as far as Kimbolton and Rewa, covering the districts of Colyton, Cheltenham, Kiwitea and Beaconsfield.

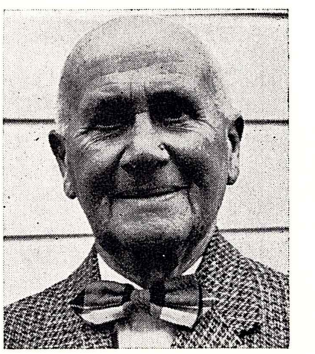
The Manawatu-Oroua Board was probably one of the first power boards to use mechanical means for erecting poles. In 1924 it had purchased an Argyle truck and converted it to a mobile crane. With the retirement of this vehicle nothing further was done in this respect until a vehicle was converted to a mobile crane in 1938. A mobile 110 volt Delco lighting generator mounted on one of the early Model T trucks was purchased in 1928 and used for pole erection and line maintenance at nights.

On April 27, 1925, the Board's substation at Bunnythorpe was officially opened by the Hon. J. G. Coates. The history of the Board to date was reviewed by the chairman, J. A. Nash, who said that the revenue for the first year of operation was £6,268, but with the increasing demand for power, it was estimated that that year's revenue would be £32,000. (Actually it was £29,000.) Poles erected had totalled 8,046 and there were 263 miles of line. Consumers totalled 2,465, including 1,145 in the Feilding Borough. The staff now totalled 101. The engineering staff was headed by W. A. Waters, with T. Donaldson, T. B. Merson and L. F. Row as assistants, and K. W. Eglinton was in control of the secretarial side. The Board was progressing smoothly.

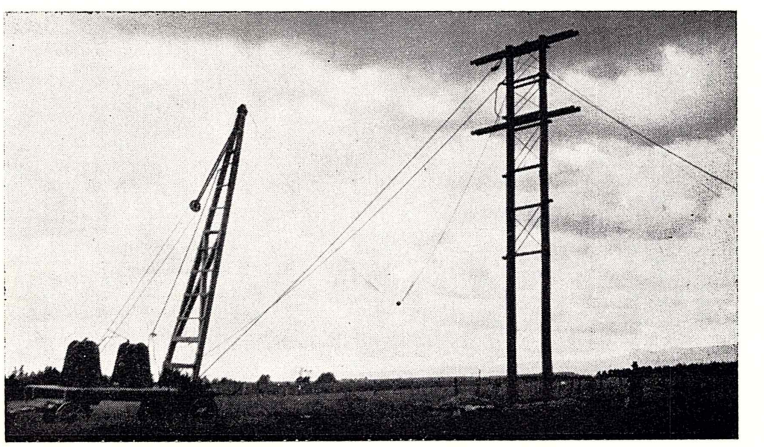
Following the ceremony, those present were the guests at luncheon in the large new transformer workshop. Amongst those present was E. H. Crabb, who

The Board's first survey party — in 1923: from left, G. Secker, J. Clevely and G. Braddel.

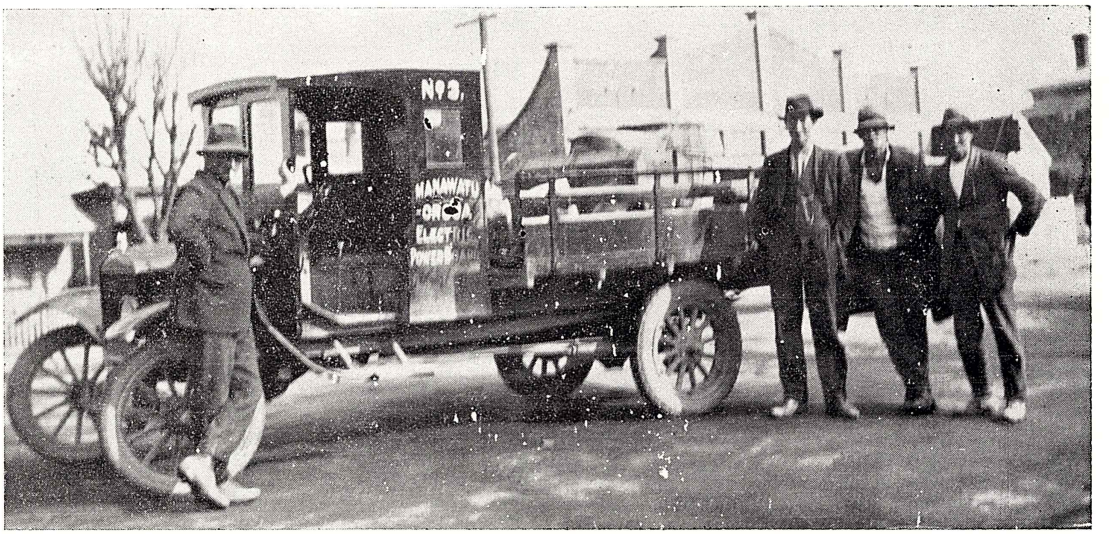
The first service line gang in 1923.



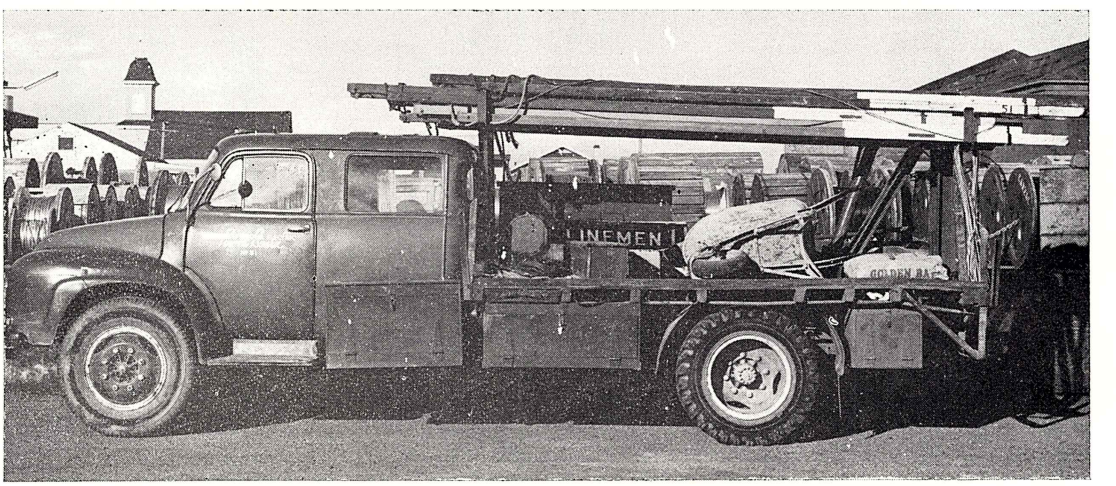
J. R. HARDIE, M.B.E., J.P.,
Acting Secretary, 1922.



The first pole erected on site at Bunnythorpe substation in 1923.



The old and new in line trucks. Pictured above is one of the Board's original line trucks. Below is a 1965 line truck, and at bottom a 1968 truck fitted with lifting leg.



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TRANSPORT AND COMMUNICATIONS

Since the inception of the Board, transport has been of major importance. At the start, faced with the reticulation of the whole area, the Board had let the carting of the poles by contract to a Mr. Wycherley, who used a four-horse team and brake for the job. The Railways Department leased areas at selected sidings for the storage of poles when unloaded from the rail wagons, and the original pole-cartage contract called for the cartage of poles from these dumps to the adjacent areas being reticulated. The pole-carting contract fell through after three loads had been delivered to the pegs, and the Board was then forced to purchase an "ex 1914-18 war" Leyland to cart the poles, on which it mounted a winch for loading purposes. The first five or six thousand main-line poles were transported on this hard-tyred Leyland truck, together with its trailer, manned by two men.

The earliest construction trucks were Fords, fitted with Woodward gears and Ruckstall axle. None of these vehicles would obtain a warrant of fitness today — the Fords because they were prone to jump out of gear on long descents, and they coasted, or rather roared, freewheel to the bottom, and the Leyland because of its hard tyres and narrow wheels, gas headlights and poor brakes. The Leyland truck remained in service until 1933 and was then sold for use at a local sawmill.

The Board also purchased two "ex 1914-18 war" Thorneycroft hard-tyred five-ton trucks, known as the "Red" and the "Grey". On these, the materials for nearly all the early lines, except the poles, were carted and the gangs rode in splendour on the back in all weathers. No "mai mai" or six-man cab obscured the driver's vision — indeed, the driver had no cab either.

To speed up erection on the flat terrain of the Manawatu, the purchase of an old Argyle truck was decided upon in early 1924, and on it was mounted a set of sheer-legs and a winch. With this truck in use, 117 poles were erected in one day — surely a record! At one stage of its use H. Bowler, later lines supervisor, was its driver. With the advent of pneumatic-tyred trucks it was retired.

When the Feilding Borough sold to the Board its electrical generating station and reticulation, its fleet of one Ford half-ton truck and one handcart were included in the deal. The handcart was given to the Feilding "town gang" who used it in the reconstruction of the borough. But on one memorable day the resident engineer, T. Donaldson, told the ganger in charge of this contraption

In October 1970 the Board decided to insure against failure of the ripple control equipment for an amount of $50,000.

At the same time an application from the Longburn Freezing Works to process the company's weekly payroll on the E.6000 equipment was granted.

The Chief Engineer, Mr. Macphee, presented an estimate of $36,655 for the upgrading of the two existing 33 kV lines to Feilding. One of these existing lines was in 19/101 copper and the other in aluminium, and the suggestion was to run both in heavier aluminium cable.

When the Board met for its March 1971 meeting Mr. Teppett, a member for Palmerston North City, presented a report outlining a proposal for a special jubilee incentive subsidy on the cost of installing storage heaters up to the date of the Board's jubilee on July 29, and this was agreed to.

The Chief Engineer presented a report on streets likely to require underground reticulation in the future. He gave the total chainage of known roading as 669 chains in the existing built-up areas and 730 chains in projected housing in the Aokautere and Massey areas.

In May, after discussion with the City Electrical Engineer, it was arranged that the city would generate, if requested to assist the overall control of the peak for a trial period to the end of June. The cost of such running was to be shared.

In June 1971 the Board took a step that soon brought results when in its wisdom it decided to implement a Training Within Industry scheme that would embrace all employees. The first T.W.I. course commenced in the Palmerston North office on October 4, 1971. This course ran for two hours every day for one week. Courses covering the same ground were later held for other groups which incorporated both clerical and technical staff. At the conclusion of the first section of the course, Mr. H. A. Parsonage was selected to take a course of instruction as a T.W.I. trainer. He conducted later courses. By having its own T.W.I. trainer the Board is able to maintain a continuing training programme.

July 29, 1971, was an important milestone in the history of the Board, for on this day it celebrated its golden jubilee for this was the anniversary of the first meeting of the provisional Board. To mark this occasion a buffet dinner was held on the evening of Saturday, February 27, 1971, in the Board's social hall. The function was attended by the Minister of Electricity, the Hon. T. P. Shand, and representatives of the electrical industry and constituent Local Authorities, Board members and long-serving and retired members of the staff. A buffet dinner and social evening was held on the following Saturday evening for present staff. To commemorate this event, a jubilee booklet was published containing an historical review of the foundation and growth of the Board. This publication paid tribute to the many — members, staff and consumers — who had contributed to the growth and development of the Board.

bonded neutral between transformers. During the preceding months and for some time to come repeated thefts of copper wire had taken place in widely scattered areas. It was reported in May 1970 that the copper losses in the previous 12 months were estimated at $1,828. The method adopted by the wire thieves was to remove the bonding neutral, leaving one span only at the end next to the low-tension termination. The Board lost many miles of line, usually in 7/052 copper.

The Board broke new ground in consumer services when, in 1970, it joined with the Electrical Contractors of the Manawatu in electrical advisory promotions. Initially space was rented in the Palmerston North Display Centre, but with the closing of those premises the Electrical Contractors' Association agreed to continue the combined display in the Board's showroom. An advisory service was commenced each Friday evening from 7 p.m. to 9 p.m. in the showroom staffed by members of the Electrical Contractors' Association on a roster basis. In addition, technical evenings and promotions were arranged covering heating, refrigeration, cooking and other matters affecting the safe and economic use of electricity.

The President of the Electrical Contractors' Association has since told the Board that the Association was extremely pleased with the "Home Advisory Service" and that the Board and the Association had something to be really proud of.

In August 1970 the office staff was re-organised. Mr. H. A. Parsonage, who had been Office Manager at Feilding, was shifted to Palmerston North but was still responsible for the work of the office at Feilding. Mr. R. J. Willan took over the day-to-day management of the Feilding office.

In September 1970 the Board's architect was authorised to draw up plans for a proposed new workshop building at the Feilding depot to replace the existing motor and carpenter shops that had been converted from the original power-house and gas retort building erected in 1915 for the Feilding Borough Council's electricity supply. This building, fitted with an overhead crane on rails, provided invaluable service over the years.

With the consolidation of baking interests in the Manawatu in a large plant, comprising oil fuel fired rotary ovens, in Tremaine Avenue, Palmerston North, all the smaller bakeries, including those at Feilding, were closed and no more bread was cooked electrically. The baking of bread by electricity has had a chequered career in the Manawatu. The original installation, sited at Longburn and owned by F. Birch and Son, comprised a 100 kW oven. This plant was placed in operation on December 20, 1941. The war years prevented any big change in bread-making methods and it was not until 1945 that the second bakers' oven was installed. This belonged to Whiteheads of Feilding and comprised two 30 kW units. In December 1956 the main Feilding bakery changed over to electric baking, having installed a 300 kW rotary oven and a 20 kW proover.

Mr. Macphee also reported on the age of the Board's 65 vehicles. Thirty-one were under four years, 12 were from four to six years, 11 from seven to nine years, seven from 10 to 12 years and four were more than 12 years old.

A milestone in the Board's reticulation was reached in May 1968 when the last of the 3.3 kV at Onepuhi was replaced by the 11 kV distribution.

For a number of years electricity billing had been processed on manual accounting machines but these machines had reached the stage of having to be replaced and would also require converting for decimal currency. As a result, an order was placed for the purchase of a Burroughs E.2000 electronic accounting machine at a cost of $30,392. This machine was installed on October 1, 1966, but it was found to have sufficient capacity to process only electricity billing and receipting. As great advances had been made in electronics and computers it was decided in 1968 to review the possibilities of installing an accounting system capable of processing all the work of the Board. As a result of these investigations an order was placed for a Burroughs E.6000 system at a cost of $96,071 and this was installed on July 1, 1969.

The Board purchased the parts of the equipment which could later be used with a larger computer and leased the remainder. This action was influenced by the decision of supply authorities in the Central Region to investigate the possibility of setting up a computer centre to process the work of all authorities in the immediate vicinity.

In August 1969 the Board's civil defence plan was presented and its functions outlined. Authority was given to implement it.

Because of repeated arson in Feilding in which the chief sufferers were churches and halls, the Board assisted with the installing of security lighting by providing poles and associated circuits. The consumers paid only the lighting charges.

In 1970 the Chief Engineer, Mr. Macphee, presented an interesting report on the manufacture of concrete poles at the Board's factory. The number of poles produced in 1963-64 was 1092. The number increased to 1397 in 1967-68 but dropped to 913 in 1969-70.

Mr. Macphee estimated that for the next 10 years it would be necessary to manufacture about 1,000 poles each year, but as undergrounding of closely-settled areas would be asked for, his estimate, he said, could therefore not be accurate.

When the Palmerston North City was negotiating to purchase the Regent Street lighting for display during its centennial year, the Board donated $6,000 towards the cost of this lighting as its contribution towards Palmerston North's centennial celebrations.

The Board decided to take part in the centennial procession and its entry took the form of a chinese dragon mounted on a Hiab truck from which it obtained its movements.

During the early years of supply, trouble had been experienced with earthing on country transformers, and to assist in this problem the Board had run a

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RECENT PROGRESS

The Board's new office block at 402-404 Church Street, Palmerston North, was opened by the Minister of Electricity, the Hon. T. P. Shand, on September 18, 1967.

This splendid building of 27,000 square feet, with three floors served by automatic elevator or open stairway, now enabled the Head Office staff, who for so long had worked in extremely cramped quarters in the old building in The Square, to carry out their duties with the added incentive of a pleasant environment. Landscaping is blended into the design of the building and from the footpath on the Church Street frontage can be seen a spacious showroom with a back-drop of a rock garden and fountain. The office partitioning, with a natural timber finish and modular pattern, is demountable and erected on previously laid floor coverings. Alterations in office accommodation can therefore be made without the need for a lot of structural work. The heating is by under-floor cables. Behind the building a spacious yard allows ample vehicle parking. The Board has since purchased and demolished two old homes in Church Street, adjoining the office, to provide parking for customers. The head office building cost $444,780.

The new control room at Bunnythorpe is a great advance on the old, which in reality bore no resemblance to a large supply authority's main control point. The old set-up had consisted of a desk with a couple of telephones and a log book, and the operator had to leave his desk to conduct all load control. In the new control room a load shedding control panel is mounted on the operations desk and the system loading is seen at a glance. A large mimic diagram gives the 11 kV distribution, with the switches in the various feeders shown as small lights. A separate panel gives the 33 kV layout.

Included in the building is a spare room which will eventually house the 11 kV circuit breakers when the Government no longer gives supply at 11 kV from Bunnythorpe. Opening off this room is a smaller room with the rythmatic control gear. There is also a lunch room with all facilities. All this control and other equipment is housed in a fine modern concrete building.

The Chief Engineer, Mr. Macphee, gave a very interesting report on the work required to strengthen the lines for further loading. He also reported on the strength of his department. The total engineering staff was 102 in 1963 and increased to 113 in 1965 and 1966. In 1968 it was 108 and by 1971 it had decreased to 99.

as from April 1, 1967, there would be a two-part tariff of $23.50 per kW plus 0.27 cents per kWH and there would be a change in determining peaks as a basis of charging.

The estimated change in tariff was expected to cost $26,500 for the first year, and it was evident that the Board would have to increase its tariff.

When the General Manager presented his report on the proposed increase in tariffs as from April 1, 1967, he gave the progressive reduction in on-cost payments from the City Council as follows: 1968—$36,666, 1969—$29,332, 1970—$22,000, 1971—$14,666, 1972—$7,332. He also presented the operating costs and revenue for the preceding five years. These were as follows:

	Operating Costs	**Revenue**
1962	$1,416,808	$1,555,776
1963	1,492,404	1,681,294
1964	1,623,200	1,863,256
1965	1,918,386	2,083,380
1966	2,085,114	2,177,960

When the Board was in its infancy and during its formative years, power shutdowns did not worry many people, but with the vast increase in the use of power, shutdowns to carry out maintenance became a major problem. So much so that to keep faith with its consumers the Board decided to purchase several mobile generators. These would enable the odd shearing plant or water pump to be kept going when the power was off in the area.

The first sodium street lighting was installed in Feilding in March 1967. Since then the whole of the town has been converted from mercury vapour and tungsten filament type lighting to either sodium or fluorescent lighting. It has been the practice to install sodium lighting in the main thoroughfares, D30 fluorescents on corners and intersections and D20 lamps along the street. Sodium lighting has also been installed in other parts of the Board's area, particularly in the vicinity of Palmerston North. The sodium lamps are erected according to National Roads Board requirements. All the metal filament type of lighting of the country townships has also been changed to fluorescent lighting with in some instances colour-corrected mercury vapour lamps.

The city, borough and counties have all become more light-conscious. In the old days a 200 C.P. lamp on a corner and a couple of 100 C.P. in a long street were adequate, but today a certain type of lamp is installed on almost every second pole in the towns. This is a truly remarkable change from the old days of the old lamp-lighter on his bicycle.

1965, when the Managing Secretary recommended the purchase of an electronic data processing machine with its attendant savings in time and staff. With this machine all accounts could be processed in Palmerston North office.

The Palmerston North City Council asked for an increase in the capacity of the Palmerston North West 33 kV line between Bunnythorpe and Terrace End in May 1966 and of the East line by May 1967. The Council also requested an additional 33 kV line from Bunnythorpe to a point on Gillespie's Line near their south-western boundary by May 1969.

At the February 1966 meeting of the Board a report was received from the Chief Engineer on the requirements necessary to strengthen the Board's 11 kV distribution to carry the projected loads until 1986. The estimated expenditure from 1966 to 1970 was $290,548, from 1971 to 1975 $435,862 and from 1975 to 1986 $253,796.

The up-grading asked for by the Palmerston North City Council in September 1965 on the 33 kV lines to the city from Bunnythorpe was completed in May 1966.

The Board had authorised the undergrounding of all the low-tension lines in the centre of Feilding and this work progressed rapidly. These areas were connected as soon as finished and the old overhead lines were removed.

An order was placed with Plesseys of Auckland for supervisory control equipment costing $16,174. The order included a radio link and spares.

The City Council reminded the Board in August 1966 that it would require the extra 33 kV feeder via Gillespie's Line by 1969. The Chief Engineer reported that the planning work on this circuit was in hand, and the line would be run in 19/183 aluminium on 38 ft concrete poles.

A further report was presented on the manufacture of concrete poles and the advisability or not of building a new pole factory on a different site. This matter was again deferred and it will probably not now again be pursued. The concrete pole position is such that the factory staff of five men has been reduced to three. Most of the original poles have been replaced.

In May 1966 the transfer was made to the new control room at Bunnythorpe. The Board at this juncture was engaged in up-grading many of its 11 kV distribution lines and work was proceeding on the reconstruction and re-cabling of many lines. In all cases the old copper conductor was being replaced by aluminium, mainly of a size equal to 0.1 copper, though a smaller size was used for lines with lighter loads. This move was dictated by the rising cost of copper, at this time about $1,368 a mile for 0.10 copper as against $744 in 1964.

With the passing of the Electricity Amendment Act in November 1966 the on-cost from the Board to the Council, which stood at $44,000 a year, was to be reduced to the actual cost of supply to the city. The Board and the Council agreed that the cost would be $5,000 plus the R.E.R.C. charge on revenue received from the Council for the supply of power. The reduction was to be effected over a five-year period. The Government also advised that

continued with reconstruction work in the Rangiwahia area until an internal disagreement in the gang developed and their services were dispensed with. In the meantime, however, they had up-graded many miles of line that had been constructed in the 1925-26 years. In the back-country area north of Feilding automatic reclosers were being installed to give further sectionalising in the event of 11 kV feeder faults.

Work on the Feilding-Sanson 33 kV line was proceeding rapidly. The Sanson 33 kV substation was commissioned in June 1964 and the 11 kV lines radiating from Sanson were supplied from the new substation.

The gangs reticulating the southern and eastern portions of the Board's area which stretched from the top of the Pohangina Valley to the sea at Tangimoana and Himatangi operated from the Palmerston North depot. This depot, including the main store, was located at the rear of the Board's office at Palmerston North up until 1950. It was apparent in 1947 that the existing facilities would not cope with the post-war expansion and an area opposite the railway yards on the corner of Church and Cook Streets was purchased. The area had been the site of a sawmill. Building commenced in 1948 but due to post-war shortages it was not finished until 1950. With the provision of a large store and workshop area, cross-arm cutting room and staff facilities, the move was very welcome. However with the continued expansion that took place through the 1950s it was decided to further extend the building in the early 1960s. The extensions were completed in 1964 and provided for the Line Department to be housed separately from the store area. This gave both sections substantially larger areas and enabled both sections to operate more efficiently. At the same time the yard was also rearranged and most of the poles that had formerly been stacked there were transferred to a three-acre site leased from the Railways Department on Railway Road adjacent to the aerodrome. With the renewal programme in progress this site was a necessity as the return to the yard of the old wooden poles that were being replaced by concrete poles created a storage problem. But this has since been solved through the great demand for second-hand poles by farmers for hay barns and so on. Such has been the demand that the Board now has very few old poles in stock.

In November 1964 a special report was prepared for the Board outlining further 33 kV transmission and giving the New Zealand Electricity Department's reasons for not supplying 33 kV from Longburn. The main reason was that the conductors between the Bunnythorpe and Longburn substations on the 110 kV lines would need to be increased in size and it would also be necessary to increase the capacity of their 220/110 kV transformer bank at Bunnythorpe. At the Board's December 1964 meeting, quotations were received for a supervisory control system to cover the requirements for the Feilding, Sanson, Kimbolton and future Bunnythorpe substations, together with provision for probable future extensions.

A major change in the method of meter reading was made in September,

type of poles. He found that the existing pole factory was not suitable for manufacture of prestressed poles, and also that the cost of the Board's poles compared favourably with that of other manufacturers. In addition the Board manufactured other special concrete products. At this period the Board was using about 1200 concrete poles a year.

The new Feilding Office was completed in September 1963 and the staff moved in after an official opening ceremony performed by the chairman, W. R. Hopcroft.

It is always an epoch in the life of any firm when expansion demands the building of more commodious premises. Over a long period the staff of the Feilding Office had been severely handicapped by inadequate facilities in the building in Manchester Square. The new single-storey 3,700 square feet building on the corner of Bowen and Stafford Streets provided the staff with comfortable working premises. The old building was sold to a firm of solicitors.

In April 1964 a report was prepared on the subject of storage heating using off-peak units. Concurrent with this was another report on the use of surplus night power. In this report it was suggested that a pumped storage generation scheme, for which a good site was available, with up to 9,000 kW in the winter and half this in the summer, be installed. It was estimated that this would give a probable net saving of between $80,000 and $100,000 a year. This scheme, if implemented, would have invited the Government to impose a two-part tariff on the Board and this would have negatived any advantages. A second scheme, involving the use of a gas turbine generator, was also still-born because of the suggested Government two-part tariff.

The Board then investigated two possible sites for hydro stations. One, using the Manawatu Gorge, gave an estimated output of 2500 to 4000 kW during the winter. The second and smaller site was near the headwaters of the Oroua River, at a place known as the "Iron Gates", a narrow rocky defile through which the river roared. This was estimated to produce only 3,500 kW at 45 per cent load factor. With both of these sites two long transmission lines would have been necessary. Neither of these schemes was proceeded with.

It was reported in May 1964 that the 33 kV line to Kimbolton had been completed and enlivened temporarily at 11 kV. This line to Kimbolton enabled the old Kimbolton feeder to be split at Kimbolton. Any faults would not now deprive such a large area of power as had previously been the case. The Board had purchased a quarter-acre section where the 33 kV line terminated at Kimbolton and had erected a switch-room on it, although the 11 kV feeder switches were of outdoor cubicle type.

The 11 kV distribution from this point consisted of three feeders, one to Apiti, the second to Rangiwahia and the third for the Kimbolton and Kiwitea areas. To enable the separate feed to Rangiwahia to come into operation as soon as possible the Board engaged a contract gang to close a 11 kV gap between Peep-o-Day and Mangarimu. When this was completed the gang

by the following winter, it became imperative to transfer part of the 11 kV Bunnythorpe load to the second Government supply point at Longburn.

At this juncture the Commission of Inquiry into the Distribution of Electricity in New Zealand asked for a report to support the earlier submission that amalgamation of the electricity undertakings of Palmerston North City and the Board would result in an equation of tariffs.

During this period the gradual changeover in transmission voltages from 3.3 kV to 11 kV had been progressing, and all series street lighting had been changed over to the parallel system. New uses were continually being found for electricity, and the supply of power to a tar heating plant at Kakariki was a new venture for the Board. During the war the Air Force installed a 1,000,000 gallon petrol tank at the rail siding at Kakariki to give supply to the air squadrons based at Ohakea. This tank had been dug into a hillside and covered with soil. When the company purchased this tank from the Government, heating elements were fitted into the large supply pipes feeding into the tank which was to be used to store the bitumen. The hot bitumen has a gravity feed and no trouble has been experienced to date.

In 1958 during power restrictions an arrangement had been made with the Palmerston North City Council to run their power station at Terrace End in order to assist both the Board and the Council to keep within their allocation. Both parties were to share the cost and the Council was to charge the Board 1½d per unit for all units generated in excess of the Council's own requirements.

Early in 1962 a start was made on the conversion of the Twin Railway Road Palmerston North feeder to 33 kV construction, the second circuit being retained at 11 kV for distribution en route. In February 1963 the second 11 kV supply, via Roberts Line, was also converted, the same procedure being adopted. Power at 33 kV was received from the State Hydro Electric Department early in December, 1962, and with 33/11 kV substations at selected points, it was considered the Board would be able to handle with ease all the load in the foreseeable future.

Concurrent with this work the conversion to 11 kV of the 3.3 distribution lines in the Taonui Colyton area and on Rangitikei Line was proceeding apace.

A new test room built in conjunction with an electrical workshop on a section adjacent to the Eyre Street depot was completed in 1960 and officially opened by J. H. Mason on April 4. Two of the original members of the Board, J. Linklater and L. T. McLean, were present for the occasion. The test room was equipped with a single-phase Ferranti stroboscopic test set and a three-phase Chamberlain and Hookam set. The electrical workshop, in addition to the repair portion and paint bay with a large drying oven, had an overhead crane and a floor pit for the larger cored transformers. A spray-painting booth was also included in the design.

In July 1963 the Board sent its Chief Engineer on a tour of inspection of other pole-manufacturing installations, with particular regard to the prestressed

look back with pride over 35 years of endeavour, knowing that in its whole gazetted area there remained fewer than ten old-established settlers awaiting supply.

In September, 1957, a comprehensive report on the distribution problems and the solutions, with a timetable for the proposed 33 kV system, was presented to the Board and authority was obtained to implement the suggested programme. This report gave a timetable for the different sections of the work that would include 33 kV substations at Bunnythorpe, Feilding, Kimbolton and Sanson together with their transformers and control gear. From these stations it was proposed to reticulate over existing 11 kV feeders, together with additional ones.

Broadly speaking, the work entailed the conversion of one of the existing twin 19/101 Feilding feeders to 33 kV, with the second used as 11 kV distribution en route and the Halcombe feeder slightly rerouted and also converted to 33 kV. Both these feeders travelled different routes on their way to Feilding. The Halcombe feeder was the original line to the town but with the growth of the borough load it had been replaced with a second and heavier line on a shorter route.

From Feilding it was proposed to construct 33 kV lines to Sanson and Kimbolton. Palmerston North City was also to be supplied at 33 kV and two of the four 11 kV feeders that gave supply to the city were to be converted. With the growth in the Massey College and Ashhurst areas, it was also envisaged that 33 kV feeders would perhaps be necessary for these parts of the Board's area. It was originally intended that a ring 33 kV would be constructed to Sanson but the second leg has not yet been constructed.

Work on the conversion to 33 kV construction and rerouting of the old Halcombe feeder to Feilding started in February 1961 and was completed by August of that year when it was tied in on the new Feilding substation structure which had been erected on the same site as the original. At this juncture the whole of the borough lines had been converted to 11 kV construction, but because of a shortage of 11 kV transformers a portion of the town was still on 3.3 kV.

Work on the second 11 kV line to Feilding, which passed close to and supplied Borthwicks on the way, was started in February 1962. This original line was in 19/101 copper and the cable was not changed.

At Feilding the substation had been reconstructed and a switch-room built, and from this point five 11 kV distribution feeders radiated, one for the business area, the second for the residential area, the third to Borthwicks and adjacent areas, the fourth to Halcombe and the fifth feeder supplied Waituna.

In July 1959 the New Zealand Electricity Department advised the Board that it was necessary to limit the loading on the Bunnythorpe substation to 20,000 kW until relief was obtained in 1962-63 by the implementation of the 33 kV supply, and as at this time the Board's loading on Bunnythorpe was 19,200 kW and with the annual $7\frac{1}{2}$ per cent estimated increase it would be over this figure

Bunnythorpe substation, approximately five miles away. This new circuit of 19/101 copper was run on the existing poles of the original single-circuit line, and was put into service early in 1956.

With the continued growth of the town, the peak loading had grown considerably and in 1958 it was about 3,000 kVA, approximately one-third of which was for hot water. By 1958 the load had been so distributed on the new 11 kV feeders in the borough that only about 600 kVA remained on the 3.3 kV bank, and it was only a matter of time before there would be no 3.3 kV distribution in the borough.

To give Feilding consumers and residents of the northern area facilities for the payment of accounts and the transaction of other business, a branch office was opened in the borough in 1924. The office was at first in leased premises in the Jubilee Buildings and later was moved to Bramwells Building in Ferguson Street. From there, in 1945 the office moved to its own premises in Manchester Square.

Just before the war the Board had decided on the manufacture of concrete poles, in particular for use on the level portion of its territory and in Feilding borough. The pole selected for manufacture was an octagonal one, and about 100 had been made when war and a shortage of steel stopped manufacture. In 1950, with the return to more stabilised markets, it was decided to recommence the manufacture, making a pole which was an adaptation of the "Marks" pole. At first a few were made outside, but because of constant interruption to manufacture through wet weather it was decided to embark upon the construction of a building to house the plant. Accordingly, it instructed its architect to prepare plans for a pole factory and this was constructed at a cost of £4,425. The building was officially opened on March 26, 1954, by the chairman of the Board, W. McKay, in the presence of many local body members and interested citizens.

Several sizes of poles were made, ranging from 20 ft to 37 ft. A common mould was used for 20 ft to 35 ft sizes. Production averaged four poles a day.

At the end of the war about 100 established settlers were still without power. Many of these people required long lines to supply them, and the Board obtained subsidies from the Rural Electrical Reticulation Council on some of these lines. In 1958, however, the Council intimated that, owing to the buoyant finances of the Board, it considered that the few remaining country extensions still required could be built out of the Board's own funds.

Towards the end of 1956 a contract was let for the erection of several sections of back-country lines, in particular the completion of the tie line to Apiti on the Ridge Road route, which also supplied several settlers. Upon completion of this line, which increased the voltage in the back country by over four per cent, the gang shifted to the Umutoi-Tunipo Road area, where the last large block of settlers in the Board's area awaited supply. This area was enlivened on August 1, 1957, and with its completion the Board could

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POST-WAR GROWTH (1945-67)

With the end of the war and the ensuing growth of load mainly in the Palmerston North City, Awapuni, Longburn, Kairanga and Rongotea areas — although the loading in other districts was growing by leaps and bounds, and was held only by Government-imposed restrictions — it was soon apparent that the existing lines from Bunnythorpe substation were fast becoming unable to carry the increase and that the Board's switchgear was also in need of replacement, if the old policy of one substation were to be continued.

In these circumstances it was decided to approach the State Hydro-electric Department for a second point of supply for the city and southern portions of the area. This was granted, and the reticulation was laid out with two interconnecting 19/101 feeders between the Board's two substations at Bunnythorpe and Longburn for emergencies, although in fact the two lines were used from the second point of supply at Longburn to give supply to the city at its north-western corner and were only available for supply to the Board in the event of an emergency, as the metering for the city was in the State substation at Longburn.

A large backlog of unreticulated areas was now clamouring for supply and a great amount of reconstruction in the older area was required. Although most pole holes in the back-country areas would have to be dug by hand it was considered advisable to purchase a hole-digger for use on flat country. A digger made in Levin was purchased and mounted on the tray of an old three-ton truck. It did yeoman service for many years but had one great failing in that in hard ground it had no thrust. Finally it was sold to a farmer for digging disposal holes on his farm and in its place two new power diggers were purchased, one for the Feilding area and the other located in Palmerston North. They were both mounted on four-wheel-drive vehicles and were fitted with a hoist which enabled the machine to both dig the hole and erect the pole.

During the war years and for a few years after the war, Government power restrictions held the Feilding Borough load in check, but nevertheless there was a gradual build-up over the years, and with a building boom in the late 'forties and early 'fifties, tests showed that the transformer banks were nearing capacity, and that with the growth in the freezing works load, the circuit feeder would soon need to be duplicated.

It was decided to change over the borough reticulation progressively from 3.3 kV to 11 kV, and at the same time to run an extra feeder to the town from

areas. With these line extensions the farmers themselves have helped in many ways, particularly in the snigging of poles, clearing the line routes of trees, bulldozing of tracks, supplying horses to pull cables and in boarding the gangs. And farmers have themselves often worked long hours with the construction gangs.

Since the early 1960s the Rural Electrical Reticulation Council's subsidies have not been generally available as the Board has been considered able to subsidise its own extensions. The guarantees required were adjusted accordingly and for larger lines represented a nine per cent to ten per cent return on capital.

In its initial construction the Board adopted the policy, where possible, of 2½-chain spacing, using 35 ft hardwood poles on all main lines, and 7/14 copper as the primary conductor in most cases. This policy was to bear fruit in later years, for, although the load on the different lines grew far beyond what had been visualised, it was not until the early 'forties that the policy of running a large cable in place of the original 7/14 became necessary. In many cases the 35 ft pole had eight feet of clearance between the high and low tensions, and usually when changing over to the new and heavier cables, several feet were cut off the top of the old pole to give greater stability to the new construction.

In 1937 the Government asked for a substantial supply of power to the new Air Force Station at Ohakea. It was realised that the 3.3 kV supply in the area would not be adequate and it was decided to reticulate at 11 kV and up-grade the feeders from Bunnythorpe. To achieve this it was necessary to repole and recable, and in some cases re-route, its 11 kV feeder from Bunnythorpe to Sanson. To adhere to the timetable set by the Air Department, the Engineer, W. A. Waters, designed and built on the back of a three-ton Chevrolet truck a wire-winding winch and a set of shear legs all controlled through an extra gearbox. Since then other mobile cranes have been built with a power-driven lifting leg on all line construction trucks.

Inevitably, the war not only caused a considerable curtailment in line extensions owing to material shortages, but also brought about large reductions in manpower, with staff members joining the Forces. In the case of the Manawatu-Oroua Board, out of a staff of 70 more than 20 served in the Armed Forces, either overseas or on home defence, and most of the remainder were members of the Home Guard or E.P.S. units. The army also requisitioned several vehicles and, as security measures, ordered the sand-bagging of several vital installations. The male members of the staff were photographed to enable them to enter defence installations when on duty.

Throughout the war the women members of the staff, under Miss I. Mayo, sent parcels to all members in the forces. This was a truly remarkable effort for, as the long weary war dragged on, enthusiasm might have waned, but in fact under her it never faltered.

counties, and by March 1927 the route-miles of line built totalled 440 and 17,135 poles had been erected. The revenue for the year was £41,200.

By this time the size and numbers of the construction gangs had dwindled.

At the election of members of the Board in 1932, the question of supply to the Palmerston North Borough Council became an important subject, as it was considered by a certain section that the Council was not paying a fair charge. Indeed resentment against sitting board members resulted in six of them losing their seats. In July of the following year, to implement their policy, the new Board decided to strike a rate over the whole area of 1/16th of a penny with an extra rate over the borough area of 7/20ths of a penny. The Borough Council resented this, went to the Supreme Court, and succeeded in obtaining an injunction against the separate rate.

In 1934 the Board and Council met to discuss another contract for the supply of power, and these discussions continued until March 31, 1937. During that period the Board had once pulled the switches on the borough lines and cut off the power, but was forced to reconnect under a Court Order. A new tariff was then agreed upon for Government standard rates, plus a service charge of $860 per annum. This contract remained in force until 1952, when, after the erection of a further feeder to the city, and with the Board giving a second point of supply, the service charge was increased to $2,016 per annum.

During the depression years of the early 'thirties, little line extension work was done, but to help the unemployment position, and in particular its own unemployed consumers with their electric light accounts, the Board on occasions employed quite a number of men on small extensions, particularly in the Makino Valley area. It also used this labour in the dismantling of the old Feilding Borough Council power-house. The lines staff, in these years, was put on to maintenance, and one of the jobs that was carried out (and most disliked) was the tarring of the old Takapuna tram rails which the Board had purchased and used as power poles. In connection with the permanent lines staff, the work was also rationed, and men were employed for four days out of every five, preference being given to married men.

With the return of better times, requests for rural line extensions began to come in, and the Board instituted a policy of building these country lines under guarantee.

In the initial stages, it asked for a five-year guarantee at 17½ per cent on the capital cost of the line under construction. This policy was altered after a period, when the Board called for a 15 per cent guarantee for 10 years. This in turn was changed to 12½ per cent. By this means most of the previously unprofitable areas for reticulation were supplied with power.

This policy of line extension to sparsely-populated areas has been helped by the Rural Electrical Reticulation Council which is financed by a special fund contributed to by all supply authorities. It is the Council's policy to assist, on a percentage basis, the returns from the lines that supply sparsely-populated

was chairman of the league set up when hydro-electric power for the district was first mooted. He was also the chief contractor for the supply of rata cross-arms that were being used on the job. These gave sterling service for many years.

The original meters were tested in the substation building at Bunnythorpe. At that time the only meters used were 5A and 10A single-phase, and 5A and 10A polyphase. During the first years, only a very few single-phase 10A meters were purchased as the average home had only a few lights and one ironing point installed.

Upon the completion of the workshop at Bunnythorpe (which incidentally was built for the princely sum of £285), there was provided a small room about 12ft by 8ft equipped with one test meter. Originally, a $7\frac{1}{2}$ h.p. motor drove a three-phase generator to supply power to this test room, but as the years went on, the Board donated this generator to the Palmerston North Technical School, and the system thus went out of use. During the late 'twenties the Board advertised for a man as meter tester. The successful applicant was E. Thornton, who had worked with Ferranti in England. After a couple of years at Bunnythorpe, the test room was moved to Feilding.

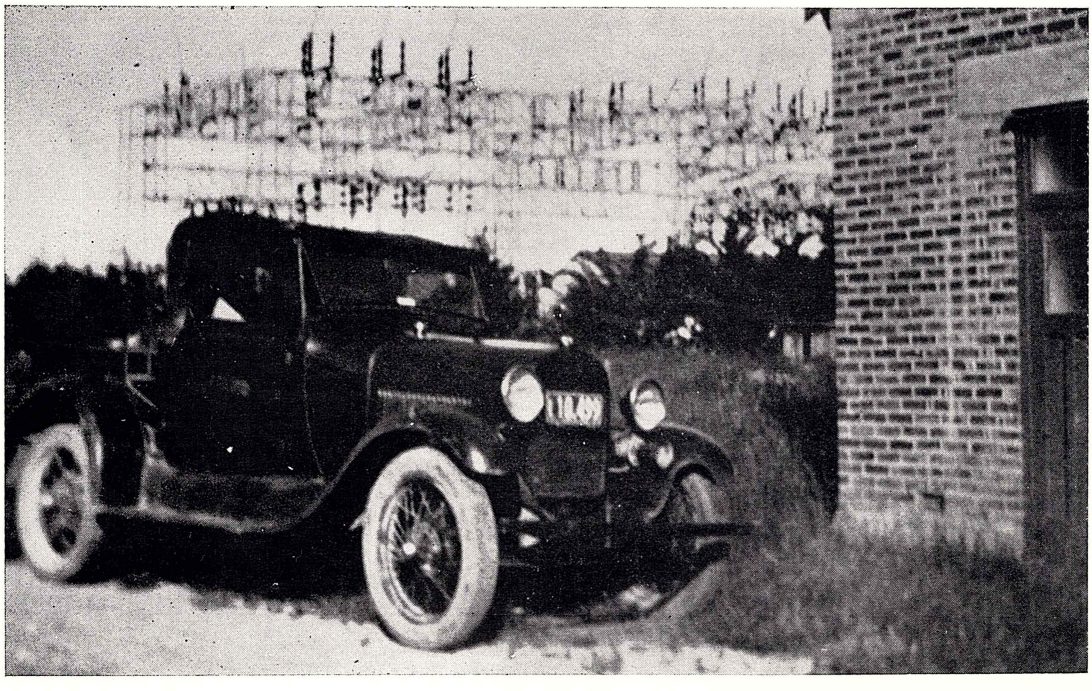
Early in 1925, with increasing load, and the need for power factor improvement, it was decided to install a 750 kVA rotary condenser in the substation at Bunnythorpe.

August 15, 1925, was a red-letter day, for it was on that day that the Board first supplied power to the Palmerston North Borough Council.

In April, 1926, the Board entered into its first power supply agreement with the Palmerston North Borough Council when it contracted to supply power at £2.10s. per kVA per quarter for the first 200 kVA, the balance being at £2 plus a service charge of £75 per quarter. This contract remained in force until 1930 when, in April of that year, an agreement was entered into for power to be supplied at Government standard rates, plus a service charge of £200 per quarter. This higher service charge was mainly due to the necessity of building an extra line to the Borough from Bunnythorpe, this line being a 19/14 twin-copper circuit run on a more direct route than the original twin 7/13 circuit.

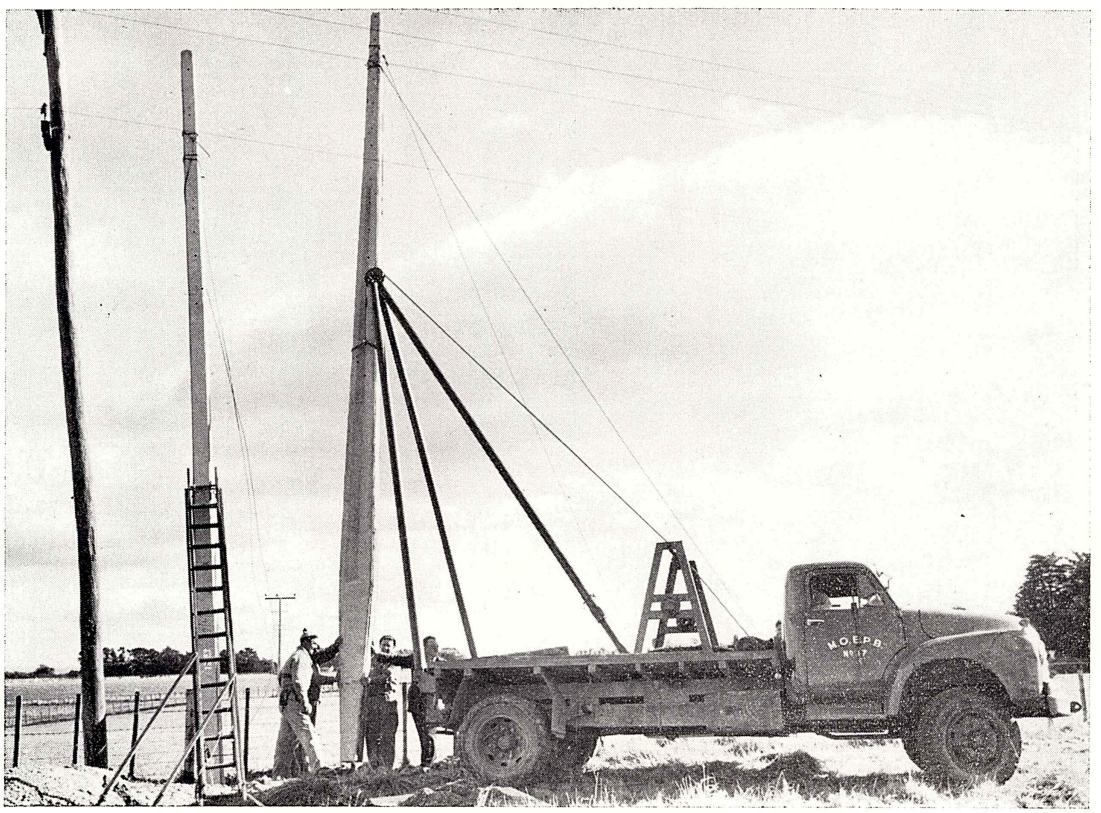
During the early months of 1926, the construction of the Kimbolton feeder proceeded apace, and on the evening of June 14 power was officially switched on in Apiti, a small township nestling under the Ruahine Ranges and 35 miles distant by line route from the substation at Bunnythorpe. This line was continued northwards for several miles, and then swung to the left, crossing the Oroua River to Mangarimu, passing through Pemberton and on to Rangiwahia, where at an appropriate ceremony the oldest settler had the honour of switching on the lights in the local hall, in the company of the chairman of the Board, several members, and most of the residents of the district.

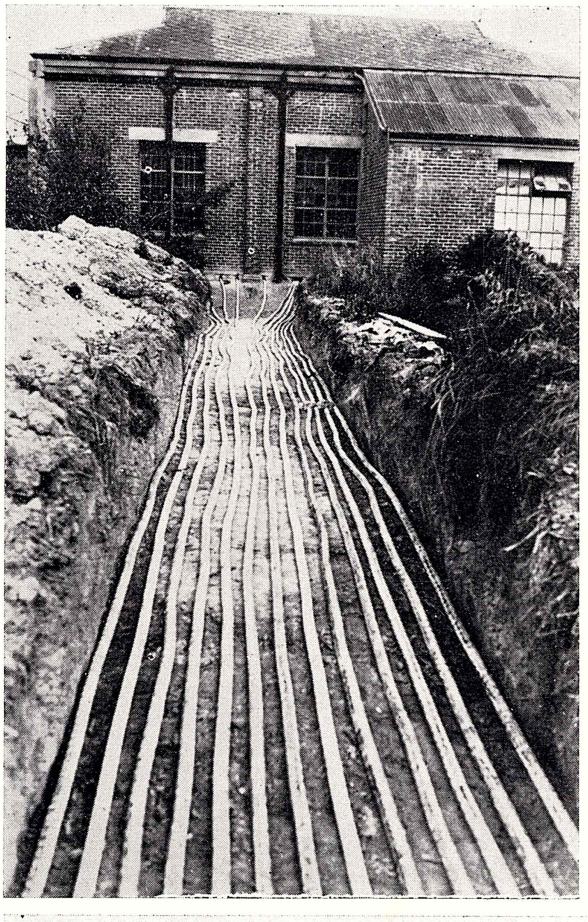
During this period the gaps were being filled in in the Manawatu and Oroua



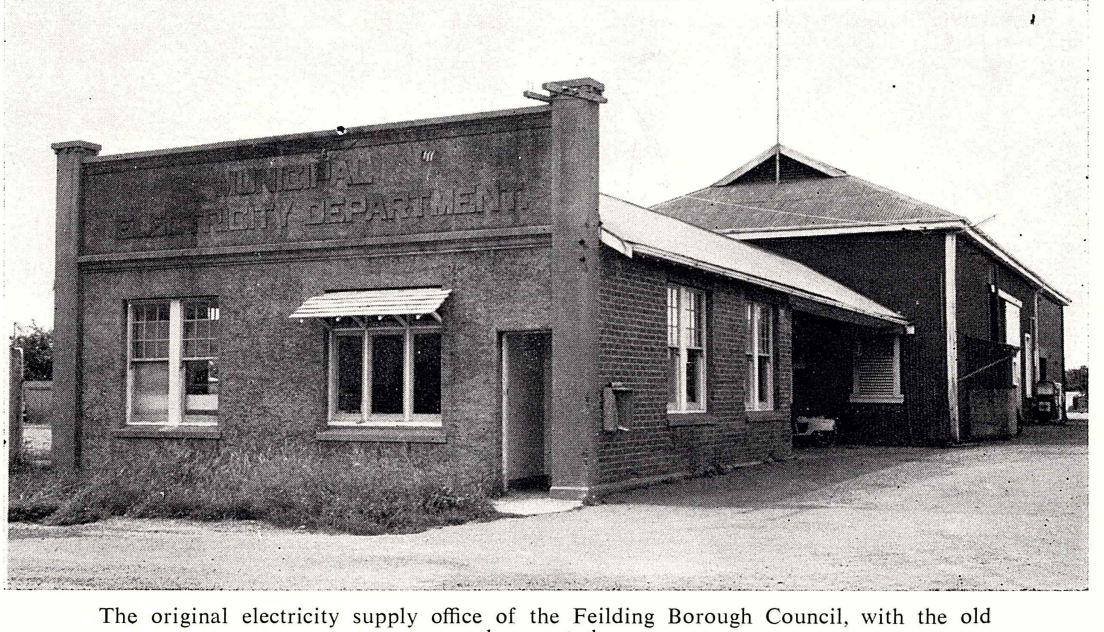
A contrast in fault trucks. Pictured above is a Model A 1930 and below a 1971 Ford.

The old method of erecting poles by jack and pikes, and (below) the modern method of pole erection, using a crane.

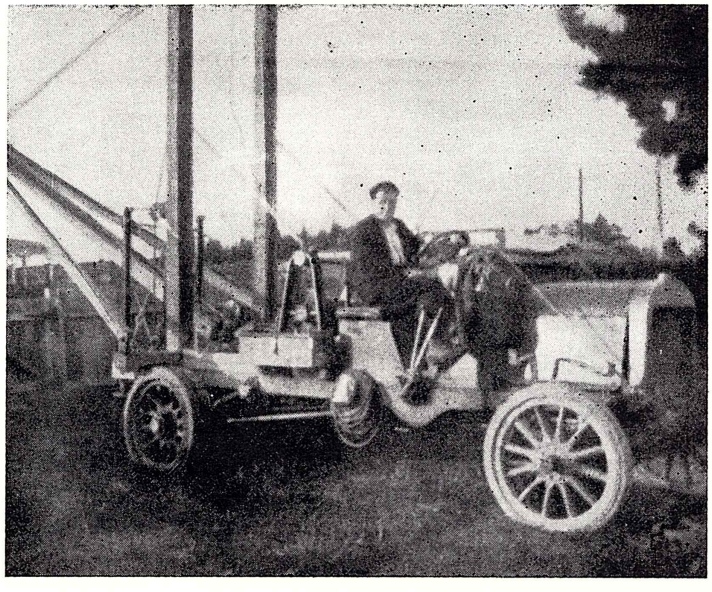




11 KV cables leading into the original Bunnythorpe substation.

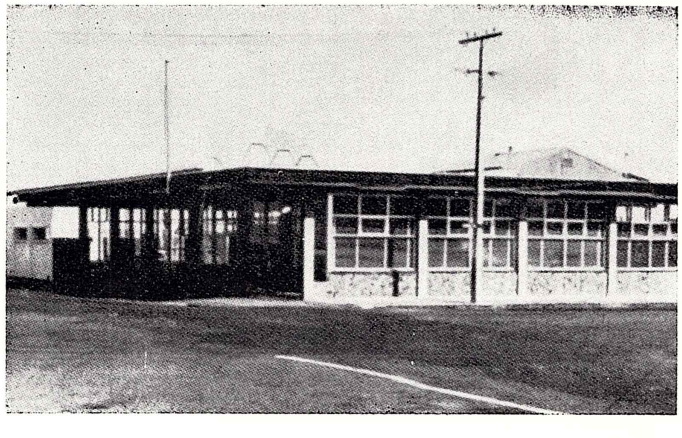


The original electricity supply office of the Feilding Borough Council, with the old power house at the rear.

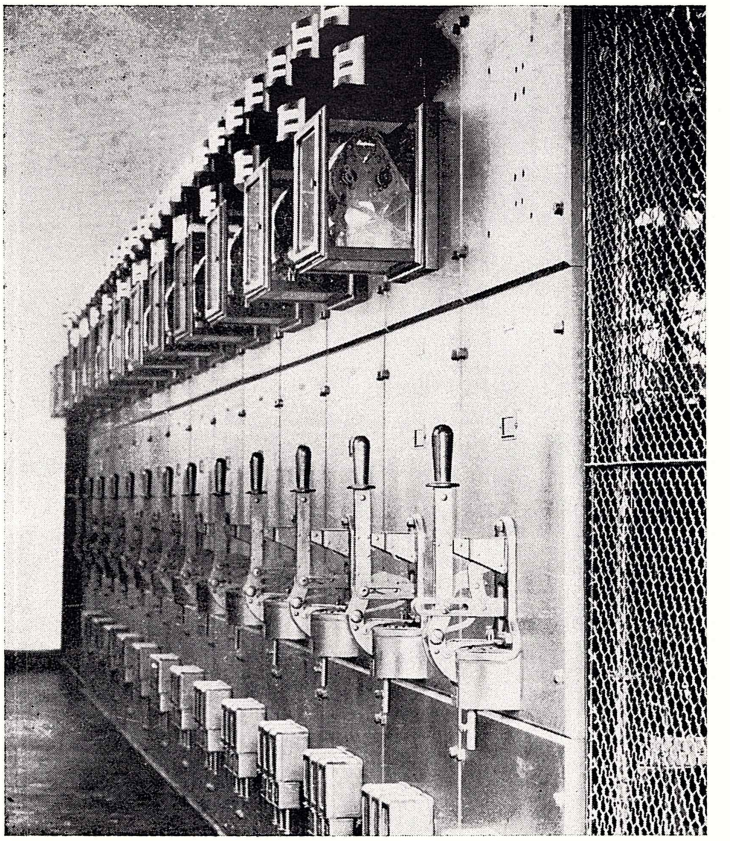


The Board's first crane, built on a 1922 Argyle chassis.

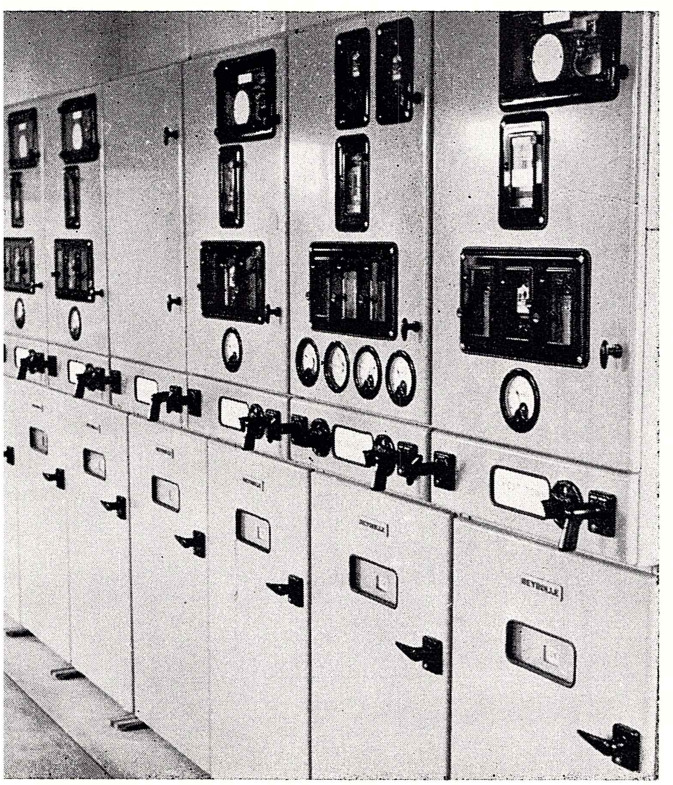
The first Feilding Office, used by the Board after the purchase of the Feilding Borough reticulation in 1924, is pictured after earthquake damage.



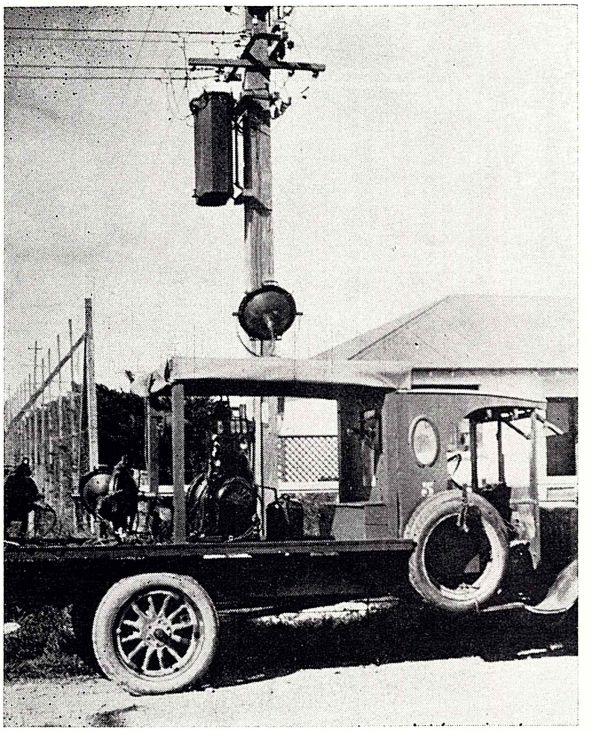
The Board's present Feilding Office, opened in 1963.



The original 11 KV switchboard in the Bunnythorpe substation in 1924.

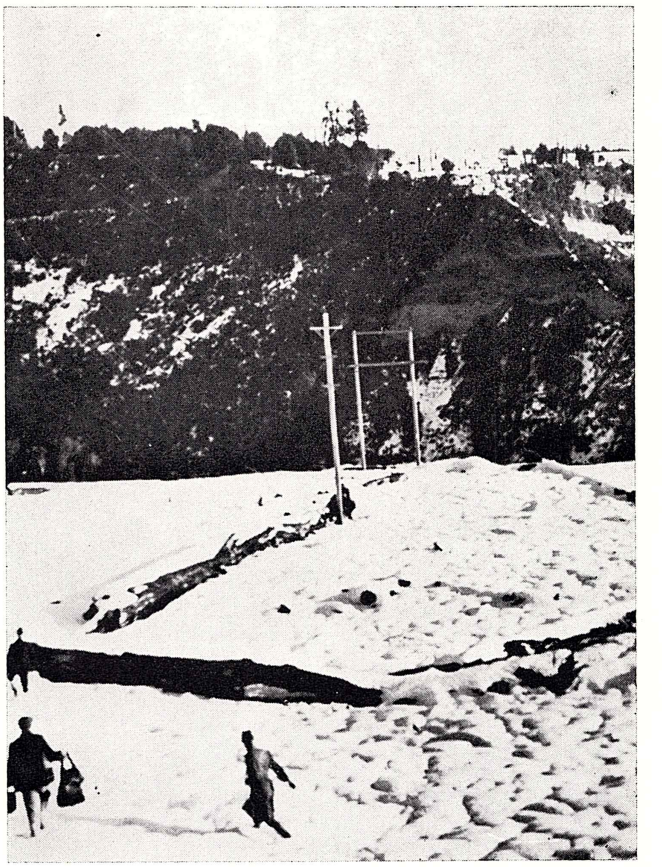


Modern switchgear in the 11 KV panel substation at Feilding.



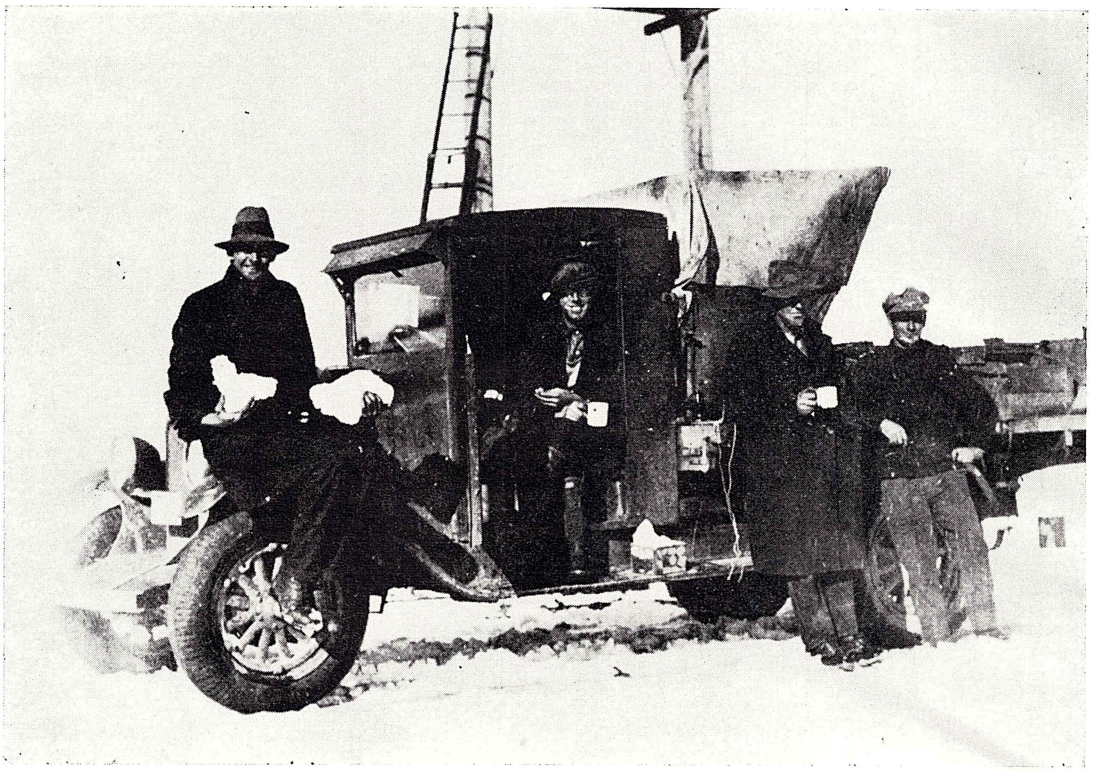
A 110 volt emergency lighting set was mounted on this Model T Ford one-ton truck. Part of the rear axle was still in use in 1971.

Loading hardwood poles at Bunnythorpe, with the Glaxo factory in the background. The Leyland 1914-18 war vehicle was used as the Board's first pole carrier in 1923.



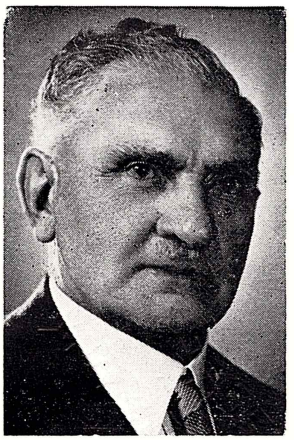
Trouble work in deep snow.

Pictured among the snow at Apiti are J. Clevely, F. Bryce, E. Ancell, L. Jenkins, R. Akuira, H. Bowler, J. Devine, E. Powell, C. Whittaker, J. Hocking and H. Smith.



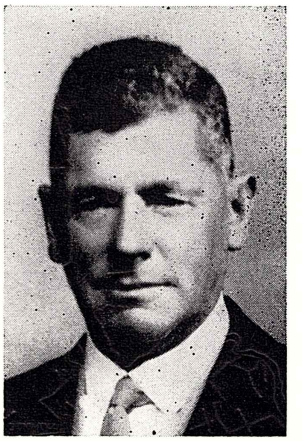
In Apiti township after a storm in 1936. H. Smith, A. Wright, J. Devine and C. Whittaker enjoy a tea break. As the photograph shows, there was a heavy fall of snow.

THE BOARD'S SEVEN CHAIRMEN

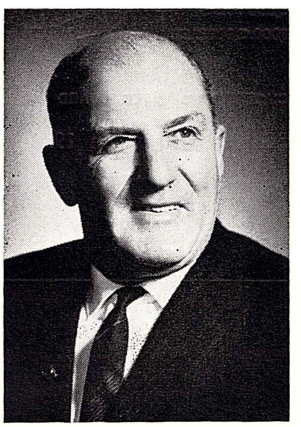


Mr. J. A. NASH, C.B.E.,
1922-1932

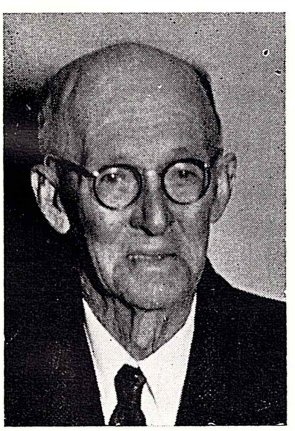
Mr. O. McELROY,
1932-1933



Mr. C. G. C. DERMER,
1933-1937

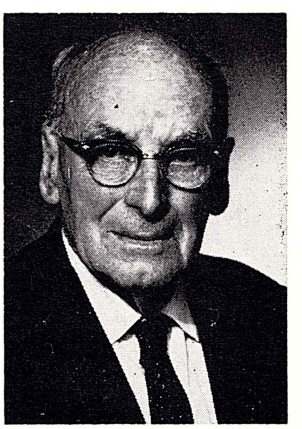


Mr. R. G. LINKLATER, A.F.C., J.P.,
1964-

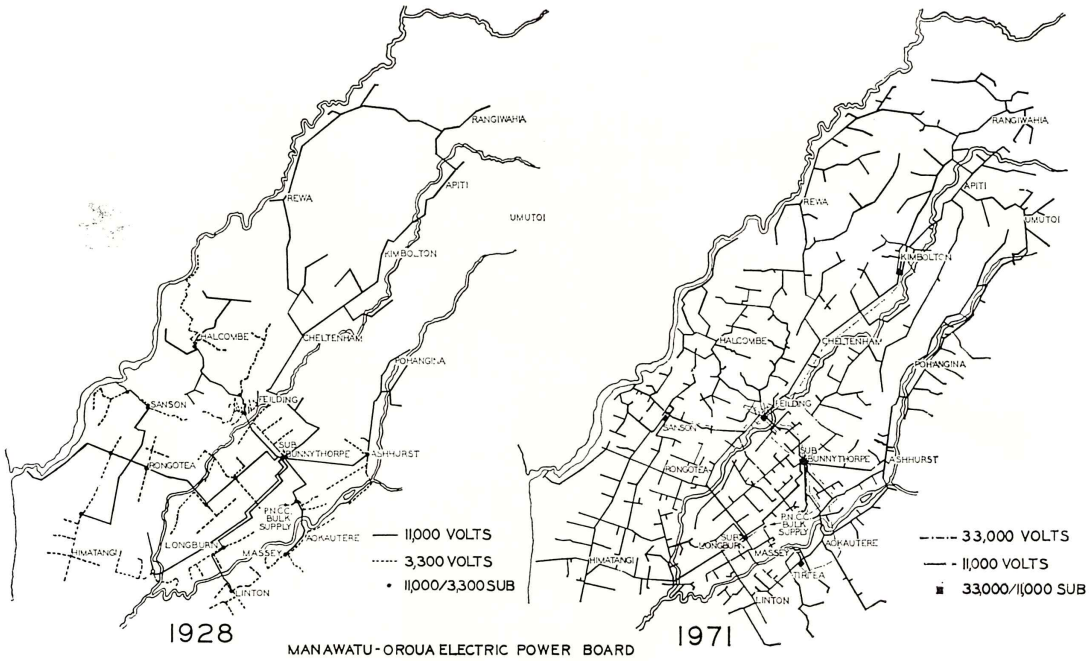


Mr. J. BOYCE,
1937-1952

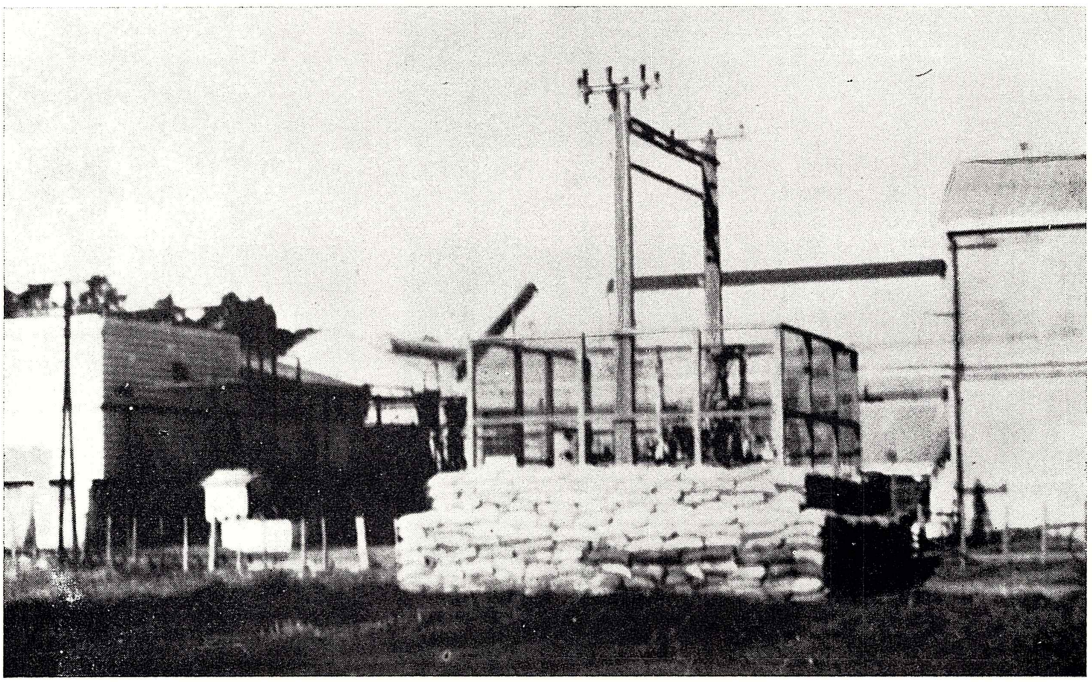
Mr. W. McKAY, J.P.,
1952-1958



Mr. W. R. HOPCROFT,
M.B.E., J.P., 1958-1964



The Board's reticulation in 1928 and 1971.



Borthwick's 11 KV—440V substation was sandbagged in September, 1939 to prevent possible war damage.

to go out to Makino, a matter of five miles, and run a service. The ganger demurred, pointing out that he would get there only in time to return. But the resident engineer got obstinate and said, "Well Harry, it's over to you." Harry pondered on this and then said, "Well, pull the b..... thing yourself and we will accompany you, lest you fall by the wayside." From that day on its use gradually declined.

About this time, the Board's office in Palmerston North had painted upon it in large letters "Power for the Farm, Home and Industry". This slogan was so loved by the engineer that he had it painted on the trucks taken over from Feilding Borough Council, and many were the unkind remarks showered upon the men who rode upon it when, as often happened in those days, the vehicle broke down.

The original Palmerston North truck depot was in the yard behind the office in The Square. It was a fair-sized yard with a brick building on the north-east side, for the storage of cased benzine. Further back was an old wooden building with a loft, reached by an external stairway. This building served as a line material store, as well as a motor repair shop. The motor workshop was in the right-hand ground-floor section of this building, and its first mechanic was a Mr. Ashcroft. He was followed in turn by Messrs. Fowles and Velvin. After Mr. Velvin left, the Board had no mechanic for several years, all its repair work being done outside. But about 1928 it appointed A. Pownall of Wanganui to the position. In the meantime the workshop had been shifted to Bunnythorpe, where later the transformer repair depot was sited.

After the purchase of the Feilding reticulation, together with the power-house, and the sale of the two diesels, it was decided to scrap the suction-gas engine and convert the building, which had a full-length overhead crane, to a mechanical workshop. Accordingly, in the early 'thirties, the shop shifted to Feilding, and Mr. Pownall continued on there until his death. He was followed by G. Caske, and he in turn by his brother E. Caske.

But the years rolled on, and the trucks gradually improved in performance and shape. Mai mais appeared on the backs of trucks for the gangs to ride in, and then came the six-man cabs. What would the old line gangs think of these modern trends, were they to see the Board today equipped with winch trucks, hole diggers and all the best equipment obtainable?

When the Oroua Power Board was combined in the larger area as the Manawatu-Oroua Electric Power Board, a Clyno motor-cycle came over in the deal. This cycle was unusual in that it had planetary gears, the same as the old-time Model-T Ford. It had originally been purchased by the Oroua Power Board, whose acting engineer was the Feilding Borough electrical engineer, Mr. Hubbard; and the motor-cycle was used for canvassing the proposed Board's district by his inspector, Z. McLeod. This cycle was disposed of, and in its place the Board purchased an Indian "Super Chief" and sidecar, which was used in the survey of most of the earlier power lines. The writer had the

dubious pleasure of riding it for 160,000 miles. It was finally crashed by another member of the staff and not repaired.

The first vehicle used for "trouble shooting" was the first Essex six brought into the Manawatu district. It was purchased as a car chassis, and a box body was built upon it. There was a seat, but no hood. The driver shivered and got drenched when it rained. But they were tough in those days. The first troubleman was F. Lysaght, afterwards engineer for Whakatane Borough Council. There was no 40-hour week in those days, and, in fact, until just before the 1939-45 war the troublemen were on seven days a week, with no overtime payment.

All messages were received by telephone, and in times of storm the gangs were often out of touch with base for long periods. And when they were trouble-shooting on feeder faults, long delays often occurred as they closed in behind an inspected section. Today, with radio and the installation of two base stations, and with most trucks equipped with receiving and transmitting sets, troublemen and gangs are not often out of contact. Thus power can be restored to affected areas much more quickly. Such communication has also done away with the rousing of settlers from their beds on cold, wet nights with the request to "use the telephone" and, in fact, it has been the greatest advance in supervision and control that the Board has instituted.

6

LOAD CONTROL

Early realisation of the necessity for load control prompted the Board to have special tariffs for night loading, and, in particular, for day-time loading. In some cases, certain types of load had to be switched off during peak-load hours. And it is interesting to note that in several of the original tariffs special consideration was given to flaxmills, an industry that is not now found in this area.

With the increase in the range load and consequent hot-water installations, it became apparent that consideration would have to be given to some form of control on hot water. The original idea was to wire the range and hot water on a change-over switch, so that they could not be used simultaneously. This did not always work in the farming areas, so it was decided to install clocks to control the hot water. Incidentally, with the introduction of "Sidey Time" (for daylight saving), named after the man who introduced the Bill into Parliament several times before it became law, two extra trips a year had to be made to adjust the clocks, but it was hard to determine if they were slow or fast.

In 1927, in the Borough of Feilding, the Board installed a 110 V d.c. pilot-wire system, controlled by land line from Bunnythorpe, where the substation operator controlled the load, and relays were placed in every house with an electric hot water service. This was the policy until 1945, but in that year the idea of a relay in every house was changed to the system of 30A relays in the street, operated on the cascade system. When the injection system was inaugurated the 110 volt relays were removed. The system now consists of rythmatic relays in streets operating a system of cascade control over contained areas.

In 1949 a low-tension injection system for hot water control was tried out. Although it did all its makers claimed, its coverage was small, being suitable for small low-tension networks only, and it did not suit the large rural areas at all. After due consideration, therefore, the Board installed a system of frequency injection control which, in addition to circuits for the separate control of domestic and cowshed water-heating, had channels which were used to control street lighting.

With the inauguration of 33 kV supply considerable difficulty was experienced with signal strengths from the rythmatic injection plants at the Feilding and Bunnythorpe substations in areas that were supplied from the Sanson 33/11 substation and it became necessary to tie the station together on the 11 kV

side to enable the signal strengths to be of enough value to operate the relays. With the construction and commissioning of the 33/11 kV substation at Tiritea, it has now become necessary to install a further plant at this point.

Late in 1970 a second-hand plant, without condensers and motor generator, was obtained from the Marlborough Electric Power Board for installation at Tiritea.

Arrangements have been made with the Feilding Fire Board for relays to be installed in selected firemen's houses so that they can be contacted in the event of a fire, as considerable difficulty is experienced with crowd control in the town when the station siren sounds.

It is intended to upgrade the Board's complete control system tariff and offer a special low rate to consumers who have a restricted hot-water service which will be supplied only during the night hours.

7

THINGS THAT HAPPEN

Power Supply Authorities over the years experience certain happenings that add spice to the day's work. For instance, in February 1931 the Manawatu-Oroua Power Board was one of the first in the field with offers of assistance to Napier and the Hawke's Bay Electric Power Board when the massive earthquake laid waste the reticulation. A six-man gang spent several weeks in the area. They camped at Greenmeadows racecourse.

At 2 p.m. on the afternoon of January 28, 1930, an explosion occurred in the pothead of the 11 kV underground cable supplying the Board in the State substation at Bunnythorpe. In a few minutes flames completely engulfed the building, and cut the supply to the Board for several hours. A temporary overhead line was hastily built and connected in to the transfer busbars in the Board's substation, and credit must be given to the Department's men who, with the Board's staff, speedily restored the supply. The Department's substation building was completely destroyed, only the concrete walls and iron girders of the roof remaining.

When the line was being run across the Oroua Gorge to the Marton Block one of the conductors became snagged under a tree growing about 30 feet down the southern bank. In an endeavour to release it a lineman climbed down an almost vertical face and freed it. But the wire swung up into the air and the man, who managed to hold on, was suspended about 200 feet over the gorge. With shouting and frantic waving, the wire was eased back and the man touched down and scrambled back up the bank.

Several earthquakes have also disrupted the supply, particularly in the Bunnythorpe and Ohingaiti areas, which apparently lie on a fault line. Just before the war, the Board's substation building at Bunnythorpe suffered considerable structural damage in one of these periodical shakes and had to be strengthened.

As Christmas 1961 was to be celebrated on Monday most of the staff had commenced their annual holiday. Then of course it happened. On Saturday a branch of a tree fell across the 11 kV lines in Te Matai Road. Apart from blowing fuses, elements, and switches as well as damage to our lines, trees, a hedge and a stack of empty fruit cases made a spectacular fire. The cost of re-installing all this came to $564. Then it came out — the branch was cut by boys for a Christmas tree. The Board decided that the spirit of goodwill would be applied — no recovery from the boys was sought.

A small gang was offered to Wellington to assist in repair work after the "Wahine" storm on April 10, 1968, and they spent about a week in the city area on essential line repairs.

With the advent of aerial topdressing the Board, in common with others, has had lines accidentally clipped and brought down by low-flying topdressing planes. On one occasion a topdressing plane flying too low up a gully picked up a farmer's phone line on its undercarriage and trailed it a considerable distance, bringing down several high-tension lines before the pilot realised what was happening. But the most sensational such happening took place at Kimbolton in 1971 when a pilot (never identified) was said to have purposely buzzed a house and an adjacent high-tension line, missed on the first attempt but caught the line in his undercarriage and brought down a considerable stretch of line with no harm to himself or the plane, but at considerable expense to the Board.

Opossums have become a major menace and the cause of many outages on the 11 kV feeders. So troublesome were they that the Board embarked upon a policy of fitting a sheet of aluminium on the poles of all its main feeders.

8

BATTLING STORMS

In a rural Board, whose territory extends from the Tasman Sea to the top of the Ruahine Ranges at the back of Apiti and Rangiwahia, it is only natural that storms of snow, gale and lightning have caused extensive damage at times with consequent disruption to supply.

After a showery, blustery night, the wind rose to gale force in the early hours of Sunday, February 9, 1936, until by 7 a.m. the whole of the Manawatu and Rangitikei Plains lay bare to the full force of an easterly gale. This gale tore whole plantations out, many of them old trees, and felled them over roads, power and telephone lines. By 9 a.m. the whole of the supply to the Board's area was interrupted. Simultaneously the telephone system had failed and with many roads made impassable by fallen trees, the prospect looked bleak indeed for power restoration.

From midday, the wind gradually abated, and by 10 p.m. there was a dead calm. In the meantime the gangs had been alerted and had commenced reconstruction and repairs. So extensive was this work that it was decided to recruit any labour available. A vehicle traversed Feilding, picking up any volunteers offering. About ten men were thus casually employed.

By early afternoon power had been restored to several nearby areas and the Borough of Feilding. Work continued far into the night and recommenced at 4 o'clock the following morning. This roster of hours continued until the end of the first week, when service had been temporarily restored to the whole of the area. Work on reconstruction started in earnest and the final cost to the Board for this blow was more than £10,000. The damage done by trees was due to an easterly gale. The trees had grown to resist westerly gales but were not equal to the strain imposed upon them by the easterly.

The worst snow storm of all took place on the evening of July 30, 1940. By daylight on the morning of July 31, a mantle of snow extended from the ranges at the back of Apiti right to Feilding, that town itself being under an inch of snow. The roads were passable without chains only as far as Kiwitea, and with chains to a point just past Kimbolton. The snow had broken service wires in great numbers in the back country, and the Kimbolton feeder itself had opened on earth leakage at 7 a.m. and would not reclose. By 8 a.m. power was restored as far as Kimbolton township, and from there on it was a matter of hard labour. By 10 a.m. progress by road as far as part way up the Oroua river hill at Apiti was possible, and Apiti itself was reached by lunch-time after

a four-mile walk. During the afternoon, power was restored to Rangiwahia township, but a further fall at Rangiwahia marooned the gangs that evening. It took several days to obtain access to most of the area affected, and Table Flat and Marton Block could not be reached for just over a week.

In the earlier days of supply, heavy frosts caused many broken lines, but nowadays the use of heavier cables and the policy of straining to lesser tension have practically eliminated this type of fault.

The Board lies fairly open to the west and the prevailing wind is a westerly. So when a fairly heavy wind started to blow from the west on the morning of August 5, 1961, little notice was taken. But by early afternoon the wind had increased to gale force, severe damage was reported and all available gangs were employed on repair work. That evening and the following day constant rain caused many slips and several of the main back-country roads became impassable. To make things worse, heavy snow had started to fall and broken wires and poles were reported from all the high country to the north of Kimbolton and Pohangina. Snow continued to fall intermittently for several days and several vehicles were marooned on roads between slips. Power was not finally restored to all consumers until August 11.

On Sunday, April 15, 1962, the barometer started to drop sharply from mid-morning until by midday it stood at an all-time low of 28.75 inches. At the same time a westerly gale started and many trees of vintage years that had withstood many a blow fell across roads and lines until at one period seven feeders were out of commission. The gangs worked far into the night and were out again at first light the following morning. All supply was restored by Monday nightfall.

On the night of August 8, 1966, and the early hours of the following day a severe snow storm disrupted the supply in the back-country. Many poles were broken and more than 100 lines were brought down.

In the early hours of November 23, 1967, a cyclone roared inland from the sea above the Air Force Station at Ohakea and swooped down across Mt. Stewart, hitting the power lines on the main Wanganui Road, bending and breaking concrete poles and smashing wires. It also damaged several sheds in this area. The cyclone then continued its eastward path and crossed Cameron's Line, demolishing a house that was scattered far and wide. Several poles were broken and bent and many wires broken. It says much for the Board's concrete poles that although the wind cut a narrow path, the poles on either side of the ones broken took the sudden strain extremely well and with little or no damage.

A severe lightning storm followed by very strong winds on November 26, 1968, caused damage over a wide area. The lightning caused six feeder outages on the 33 kV, two steel towers were hit, and the conductors cut. Many poles needed replacing and a grand total of 605 repairs were done by faultmen.

Parts of the district appear prone to lightning damage. Over recent years the fitting of additional arrestors in certain areas has alleviated this problem,

but the Board still gets as many as 60 to 100 transformers put out of commission with one storm.

Fortunately little property damage eventuates from lightning, although on one occasion a home in West Street, Feilding, had a corner blown out, where the radio aerial entered, when it was struck.

Strangely, the floods of yester years do not now seem to happen, perhaps because of the work of the Catchment Board. But the writer well remembers the earlier years when extensive flooding in the Rangiotu and Rangitane areas caused extensive damage to milking and separator motors and the Board kept a flat-bottomed boat moored at Rangiotu for such an eventuality.

9

MASSEY UNIVERSITY DEVELOPMENT

In 1923 the writer was seconded from the Board to an electrical contracting firm in Palmerston North to gain experience and during this period one of the jobs he worked on was the homestead of Mr. P. A. McHardy which was sited on the grounds now part of Massey University. Little did he then think that 50 years later this area would be part of the site of today's University complex.

The area between Linton and Ashhurst on the southern side of the Manawatu River had originally been supplied at 3.3 kV. The 11 kV supply at Linton ended by the Linton Store and fed northwards from there as far as the Kahuterawa stream. The 3.3 kV feed back to this point was from a 11/3.3 kV substation on the Fitzherbert Hill and it supplied the area now known as "Massey" and its vicinity. As a point of interest, these two 3.3 kV feeds were never paralleled. The 11kV river crossing to this substation was at the end of Te Matai Road and it gave endless trouble with river erosion. But over recent years the Catchment Board has straightened the bed of this river and little or no trouble is now experienced.

When the Government purchased the area containing the McHardy and Batchelar homesteads for an Agricultural College which they were to call "Massey", in honour of William Fergusson Massey, an outstanding N.Z. Prime Minister, who had recently died, it decided to combine the agricultural schools of Auckland and Victoria University Colleges at Massey Agricultural College. Massey was opened in 1928 and problems of power soon reared their head.

With the reasoning that this area would eventually require more power than the 3.3 kV distribution system could supply, it was decided to bring the 11 kV into the area. Early in 1930 the area from Linton Store corner as far as the Tiritea Road was converted to 11 kV. This work was carried out at night by means of the Delco 110 volts supply with six floodlights mounted on old No. 5 (a Model T Ford). The gang on this job worked only seven hours each night at ordinary rates but were paid for eight. This changeover was completed on Christmas Eve, 1930, the original conductors being left in all cases. The 11 kV supply from the Longburn side via Karere Road crossed the river on two 85 ft towers raised to 106 feet with a 29-chain span of 7/122 all across the water-way with a 75 ft sag. It had originally crossed on 40 ft hardwood poles, but floating trees in floods often entangled in the lines. Hence the towers and the longer span.

With a steady increase in loading in the university area the conductor sizes

on the 11 kV were increased and when the second point of supply for the Board was inaugurated at Longburn part of the loading was transferred to it. With the construction of Linton Military Camp the second point of supply fed both the camp and the university area.

In 1960 it was decided to upgrade the existing 11 kV line along Walkers Road just north of Longburn and install a river crossing and run a line across to the Kairanga Track now known as Camp Road and on to the main Palmerston North-Shannon highway.

The new line would pass Linton Military Camp en route and would give a more direct line to both the camp and Massey. This line, run in 18/132 with steel core aluminium as far as the river and then in 6/186 with steel core with an underground 0.1 copper section adjacent to the camp itself, was built and commissioned in January 1961. The river crossing in this instance is on 52 ft hardwood poles with a 13½ chain span, a 31 ft sag and a water clearance of 29 feet with a 3 ft fresh at Fitzherbert Bridge.

Fed from the second point of supply, this line enabled the old loop line from the original crossing in Karere Road to feed only to Camp Road corner, thus giving an emergency feed to both the camp and Massey. This was the position until the commissioning of the Tiritea 33/11 substation in 1971.

When, in August 1968, the Chief Engineer, Mr. Macphee, presented a report to the Board on the advisability of running the 33 kV to this area which was capable of supplying up to 20,000 kVA, he gave the past, present and estimated future loading of the several largest consumers in the immediate vicinity, including Massey. His estimate was consistent with approximately 3,000 acres of the southern side of the river now being in the Palmerston North City area which would eventually be closely settled.

	1958	**1966**	**1968**	**1972**	**Actual 1971**
University	196 kVA	705	960	2200	1410
Grasslands & D.S.I.R.	258 kVA	639	657	1657	1029
Linton Camp	215 kVA	558	675	827	852

The estimate for the 33 kV line from Bunnythorpe, with its attendant substation and two transformers, was $222,600 with a further $79,000 for a Massey-Longburn loop. The timeable provided for the work to be completed by the winter of 1971. In August 1969 instructions were given to the Survey Department to investigate a route for a 33 kV line from Bunnythorpe to a point on Old West Road at the rear of Massey.

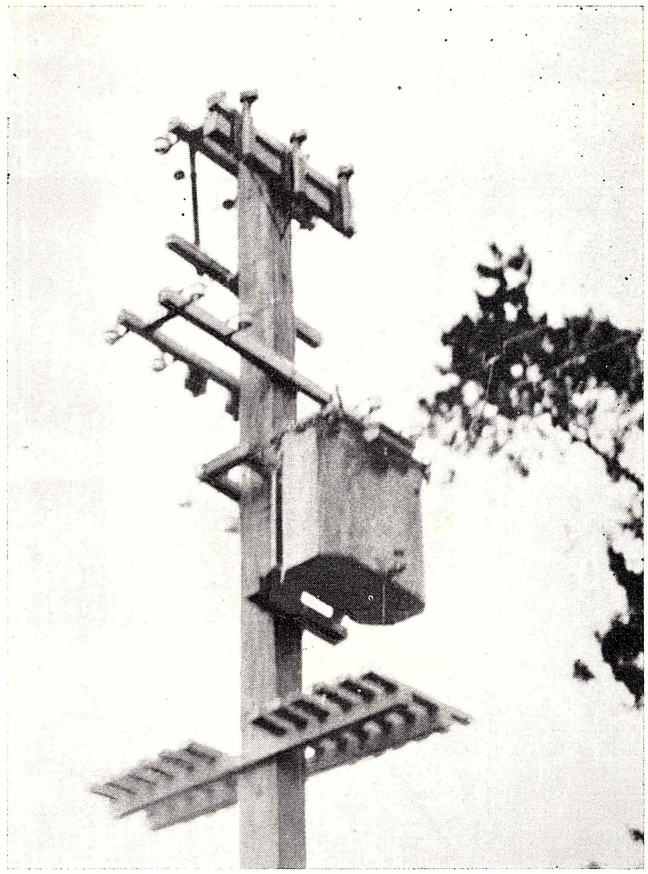
Considerable difficulty was experienced in obtaining a suitable site for the substation, because of land-owner opposition, but the position was finally adjusted. The Board decided on a single circuit 19/183 AA line run on 38 ft concrete poles of its own manufacture. Concurrent with this job, tenders were called for two larger 33/11 transformers for the Feilding substation. The two

7.5 M.W. Feilding transformers were to be transferred to the new substation on Old West Road.

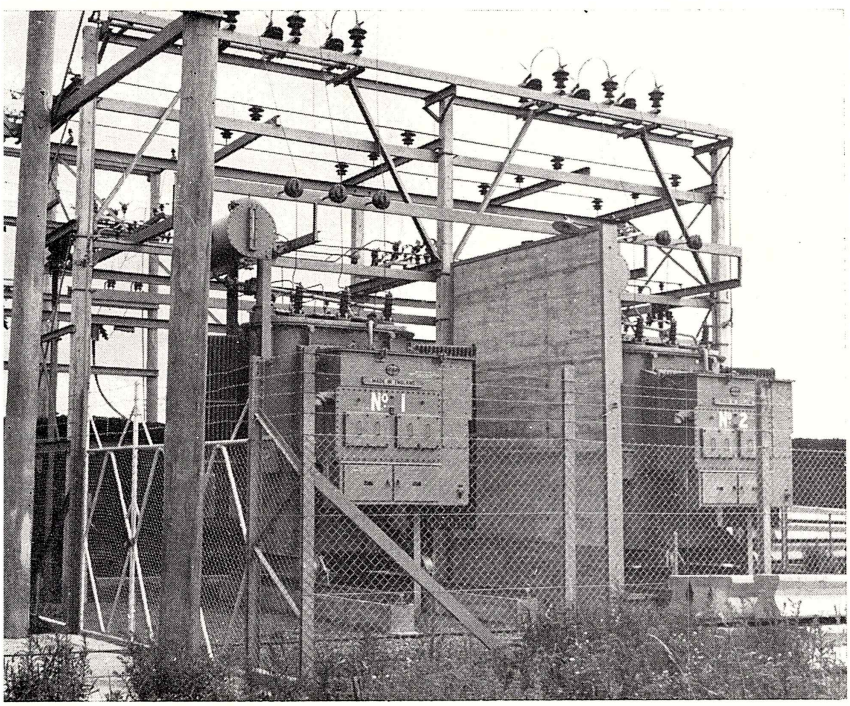
Work commenced early in 1970 with gangs from both the Feilding and Palmerston North depots working from their respective ends — Feilding to Kelvin Grove and Palmerston North from there on. This work was completed with the shifting of the 7.5 M.W. transformers from Feilding substation to the new Tiritea substation on Old West Road and the installation of two larger 33/11 transformers at Feilding. The Tiritea substation was placed on load on August 2, 1971. An official ceremony was held on the following Monday in the presence of Board members together with the members of the staff associated with the project. The chairman, Mr. R. G. Linklater, gave a resume of the work involved, together with the costs. He also mentioned that 3,000 acres of the city were now on this side of the river and the Board would look forward to a big increase in load in this area.

The 33 kV line from Bunnythorpe to the Tiritea substation cost $113,652 and the substation and its two transformers $125,877 — a total of $239,529.

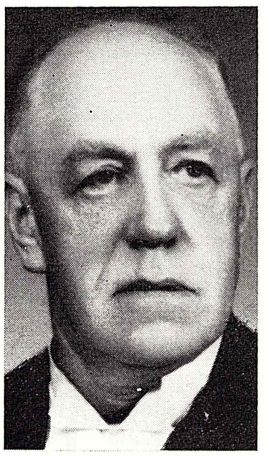
In conjunction with the above changes it was necessary to reconstruct the 11 kV distribution in the area. The line on Old West Road was upgraded at a cost of $15,034, and a further $6,000 spent on Tiritea Road completed this major undertaking.



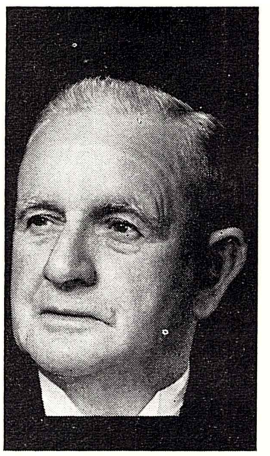
The Board's first 3.3 KV pole mounted transformer, erected in 1923.



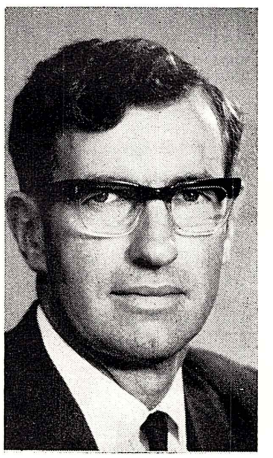
Two 33-11 transformers at the Feilding substation in 1971.



W. A. WATERS

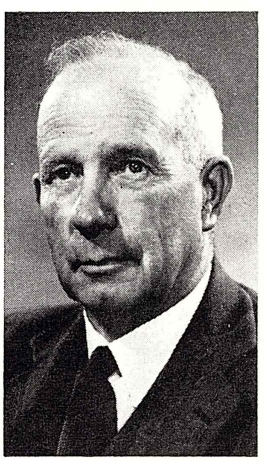


T. A. DONALDSON

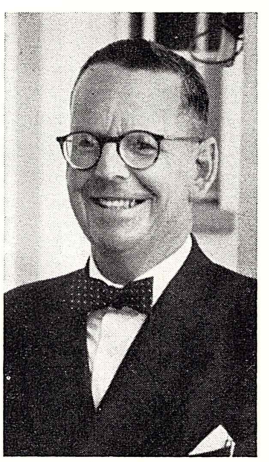


M. D. MACPHEE

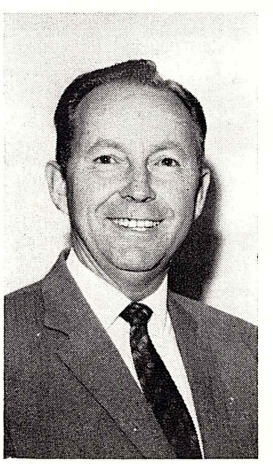
THE BOARD'S ENGINEERS (above) & CHIEF EXECUTIVE OFFICERS



K. W. EGLINTON

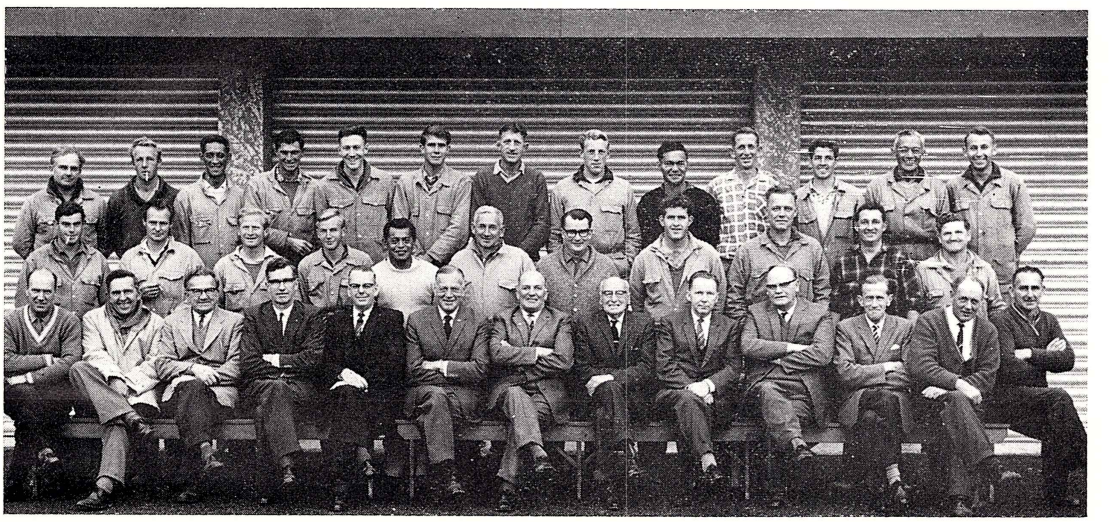


E. W. CHARLES



A. T. SPAIN

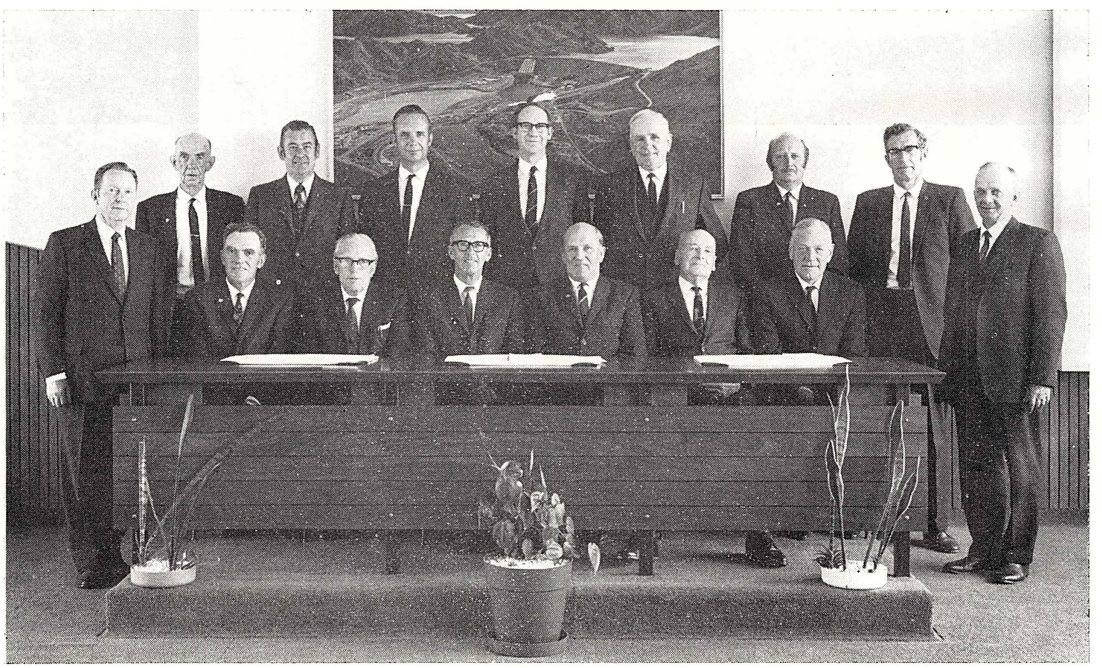
All who were present at the opening of the Bunnythorpe substation in 1924.



The Palmerston North lines staff in 1966.

The Feilding lines staff in 1966.

Board members and Executive staff — in 1924 and 1971.



10

THE STAFF

No business or organisation can function without a competent and loyal staff and this Board has down through the years been staffed by people who not only worked for the Board but made it their life's work. Many of them have served the Board for well over 30 years, and only three chief engineers and three managing secretaries have guided its destiny.

J. R. Hardie, the then Town Clerk of Palmerston North, was acting secretary from the first meeting of the Provisional Board on July 29, 1921, until a full-time secretary was employed.

K. W. Eglinton was appointed secretary and Chief Executive Officer of the Board on October 30, 1922, and commenced his duties on December 1, 1922. When staff was reorganised in 1933 K. W. Eglinton was appointed Managing Secretary. On his retirement on March 31, 1958, E. W. Charles, who had served as Accountant for 28 years, was appointed Managing Secretary and A. T. Spain was appointed Accountant.

W. A. Waters, the first engineer, served until 1945. He was succeeded by T. Donaldson, who had joined in 1923 as an assistant engineer and served first at Palmerston North and then at Feilding. T. Donaldson retired on May 31, 1957, and was succeeded by M. D. Macphee.

H. Bowler served for 41 years, beginning in the Palmerston North area as a lineman, transferring to Feilding as foreman, and then going back to Palmerston North in February 1932 as senior lines foreman. Miss G. Young, the engineer's typist and the Board's second employee, retired in 1960 after 38 years' service. She joined in May 1922 when the offices were in H. L. Young's buildings in Broadway. Miss I. I. Mayo, of the Feilding office, retired in 1961 after 35 years' service.

In the rearrangement of staff in 1968 E. W. Charles was appointed General Manager, A. T. Spain Secretary and J. S. Devonport Chief Accountant. On the retirement of E. W. Charles on June 30, 1970, after completing 40 years of service with the Board, A. T. Spain was appointed Managing Secretary and Chief Executive Officer and J. S. Devonport Assistant Secretary. M. D. Macphee continued as Chief Engineer, assisted by three assistant engineers. One of the assistant engineers, J. M. Townsley, who had served since May 1936, retired through ill health in 1970 after 35 years' service. F. Powell, Lines Supervisor for the Palmerston North area, retired in 1969 after 45 years' service. He had risen from boy, trainee lineman, lineman, leading hand, foreman and troubleman

and on the retirement of Mr. H. G. Bowler, the Palmerston North area Lines Supervisor, he took this position. A lifetime of service to the industry was given also by F. W. Poole, who retired in December, 1971, after 47 years. His earlier years were spent in the Feilding area where anyone did anything. Over recent years he worked at Head Office.

Many of the present staff have served for more than 30 years. They include A. R. Treleaven, N. H. Winter, W. G. Pearson, E. F. C. Bainbridge and E. C. Caske, all of whom also served in the armed forces overseas during the war. Others such as H. A. Parsonage, W. Fowles, J. Guard and J. Blackwell all have more than 25 years' service to their credit. A. R. Treleaven was the first electrical apprentice employed by the Board and today he is Chief Inspector.

The question of safety has always exercised the minds of Board members and in May 1950 the then chairman of the Board, Mr. W. R. Hopcroft, donated a shield for safety competitions among the line gangs. Each year the different depots run a series of elimination trials, and a competition is then held between the leading teams. In addition to the shield, the Board also awards a trophy to each member of the winning team. This winning gang then competes in an area competition between winning teams from electrical supply authorities in the Central Region. These competitions are held in different parts of the Central Region and are eagerly looked forward to by the competing gangs who, apart from the competition, meet with staff members of other supply authorities. They also look with a critical eye upon the vehicles and gear the other competitors use.

11

BOARD MEMBERS

The Manawatu-Oroua Board has over the years been governed by successive Boards that have maintained the high standard expected of such bodies. Altogether there have been 61 Board members, and seven chairmen have presided at its meetings.

At the outset the Board was made up of gentlemen seconded from existing local authorities who acted until the next local body elections. The first elected Board came into being in 1922. It comprised 12 members, including the chairman and a deputy chairman. The Board had for its first chairman a well-known Palmerstonian in the person of J. A. Nash, C.B.E., M.P. Mr. Nash was a very old resident of the Manawatu and was very well known to the early settlers as the Manager of the "Ready Money Store". He afterwards went into real estate, stood for the Borough Council, became Mayor and was the local Member of Parliament for many years.

One of the original members, G. J. Harford, who represented Feilding and was also the Mayor of Feilding at the same time, resigned during the first year and was replaced by J. S. Tingey who represented the Borough of Feilding until 1929 when P. G. Guy took over the representation.

The first Board included another Member of Parliament in J. Linklater, O.B.E., who after service in the South African war entered local body politics and then Parliament, serving for several terms. His son, R. G. Linklater, A.F.C., J.P,, is the Board's present chairman. After distinguished war service he also went into local body work. He is the vice-president of the Electrical Supply Authorities' Association, a member of the Executive Committees of both the Electrical Supply Authorities' Association and the Electric Power Boards of New Zealand and an Executive Director of the Electrical Development Association.

When S. R. Lancaster died in 1925 J. Hodgens, M.B.E., a Labour stalwart who afterwards represented Palmerston North in Parliament, became a member of the Board. He had two terms of office (1925-1941 and 1947-1955). One of the original members, J. Morrison, did not seek re-election in 1926 as he lived in Wanganui, although he had a farm at Tokorangi. He became a member of the Wanganui-Rangitikei Board in 1927. O. McElroy represented the Oroua County in his stead. Mr. McElroy was chairman for one year (1932-33). J. H. Vincent, who lived in Ashhurst and had represented the Oroua County, died in 1927 and his seat was taken by A. Campbell of Taonui.

When F. Arbon of Pohangina County died in 1928 F. J. Roberts of Utuwai replaced him, staying for only two terms before being defeated by W. McKay. Mr. McKay, a butcher and farmer of Apiti, had been instrumental in getting power into Apiti long before other areas of the Board. He was chairman from 1952 to 1958 and a member until his death in 1960.

In 1932 an association known as the "Electrical Consumers' Association" came into being. For years the bone of contention had been Palmerston North, which the country members of the Board considered should be part of the Power Board. But they were up against strong opposition in the persons of the city members, led by J. A. Nash, the chairman. At the local body elections of 1932 the "Association", organised by E. O. Bond of Awahuri, put up candidates in the rural areas and as the result of skilful campaigning seven sitting members, Messrs. Linklater, Campbell, Small, McLean, Roberts, Perrett and Hunt, lost their seats. They were replaced by J. Batchelar, E. O. Bond, W. P. Bickers, W. McKay, N. Campbell, J. Boyce and C. G. C. Dermer. At the first meeting of the new Board they appointed as chairman O. McElroy, who was a sitting member of the old Board and represented the Oroua County. When the time came to appoint delegates to attend the Supply Authorities' annual conference J. A. Nash, President of the Electrical Supply Authorities' Association, who was on the other side of the fence to the newly-elected members, was not elected as a delegate. This posed a problem and was only solved when Palmerston Borough elected Mr, Nash as one of their representatives.

At the 1935 election O. McElroy was replaced by J. H. Mason who went on to serve on the Board for 30 years, a good portion of this period as deputy chairman. It was he who officially opened the new electrical workshop at the Board's Depot in Feilding. When O. McElroy relinquished the position of chairman in 1933, he was suceeded by C. G. C. Dermer, a noted Jersey Breeder. Mr. Dermer was well known also for giving instructions to have the supply to Palmerston North disconnected at midnight on a certain date, because of the long-standing arguments on tariff.

When C. G. C. Dermer stepped down as chairman, J. Boyce of Glen Oroua took over the reins and held the position until succeeded by W. McKay in 1952. Mr. Boyce was a great staff man; he presented the Boyce trophy for quiz evenings and rarely missed staff functions. Of the other two members elected in 1932, W. P. Bickers, who lived at Ridgelands and represented the Oroua County, served until 1944 when W. S. Page of Halcombe took over. N. Campbell, of Kauwhata in the Manawatu County, continued on the Board until his death in 1950. He was succeeded by A. S. Dawick. W. G. Shannon was a member from 1935 to 1941 when J. Batchelar started his second term of office. Mr. Batchelar first came onto the Board in the great reshuffle of 1932 and served for that term.

W. G. Shannon and J. Linklater are two members who have left a heritage in that both in later years had sons who followed in their fathers' footsteps.

Mr. Shannon's son, W. V. Shannon, was a member from 1956 to 1959.

When J. Hodgens stood down in 1941, J. T. Heatley took the vacant seat and served until 1947, whereupon Mr. Hodgens took over again. In 1938 L. A. Hogg, who had previously been on the Board's staff as a meter reader, replaced E. O. Bond. Mr. Hogg is remembered most as the man who drove his meter-reading vehicle without a driver's side door on. Why? Because he once parked his vehicle in George Street, Palmerston North, and on returning to it was unable to start it with the starter. Unfortunately he left it in gear and with a full throttle on the hand control went around to the front and cranked it. The engine fired on the first turn, burst into life, mounted the footpath and ended up in C. M. Ross's window. Mr. Hogg was able to side-step in those days.

In 1943 a new member in the person of W. R. Hopcroft, M.B.E., J.P., appeared at the Board table. Mr. Hopcroft, who served continuously until his retirement in 1971, was also for a period chairman of the Kairanga County. He had a deep understanding of human values and also took a great interest in the safety of the line gangs.

Palmerston North City has been represented by several Members of Parliament, the more recent being W. H. Brown (1944-67) and P. O. Skoglund (1955-58). A member of the staff of Massey University, Dr. J. K. Scott, was also a member, serving from 1952 to 1959.

Two brothers served on the Board simultaneously. They were N. J. Short of the Kiwitea County (1944-65) and V. B. Short who first represented the Oroua County and later the Feilding Borough Council and served from 1953 to 1968. For three years during this time V. B. Short, J.P., was Mayor of Feilding.

The year 1956 saw four new men gain a seat on the Board. They were B. Henderson, R. G. Linklater, A.F.C., J.P., W. V. Shannon and J. Q. Cameron, J.P.

R. Craig, a farmer of Oroua Downs who in 1953 replaced J. Boyce, the chairman from 1937 to 1952, was on the Board for only one term as he had a car accident from which he did not recover. His seat was taken by B. Henderson.

When P. G. Guy died in 1947 D. H. McInness, a solicitor of Feilding, took the vacant position and he served until 1955, when he moved to Rotorua. R. J. Cleland, who was on the Feilding Borough Council, was appointed to the position for the unexpired portion of the term. He retired in 1956 and did not offer himself for re-election.

Mr. Henderson served for only one year. Mr. Linklater has continued and has been chairman since Mr. Hopcroft retired from the position in 1964. Mr. Shannon served until 1959 and Mr. Cameron is still a member. Mr. Cameron is a keen sportsman and the owner of several good horses. He represents the Manawatu County and resides at Oroua Downs. Mr. Henderson's seat was taken by H. Hamlin who held it until his retirement in 1965.

In 1958 J. A. Colquhoun, who had been a master at the Boys' High School and the coach of its first XV there for many years and was at the time of his election to the Board a member of the City Council, succeeded Dr. J. K. Scott. Mr. Colquhoun served for only one year and was followed by R. P. Morgan, previously a staff member who had worked in the Palmerston North office until branching out on his own as an accountant. 1959 also saw the election of M. W. Waters who served in the Air Force during the war and was the eldest son of the first Chief Engineer, W. A. Waters.

Mr. H. A. Bodell represented Palmerston North from 1962 until his resignation in 1965, when his construction company tendered for the construction of the new office building.

The Pohangina County had long been represented by W. McKay and upon his death in 1960 the mantle fell upon J. H. Cowan, J.P., a farmer of Apiti who served in the Pacific during the war. He has continued in office to the present time. E. W. Burson, a Palmerston North builder, who commenced in 1959 did not seek re-election in 1965 and his seat was taken by C. W, Teppett, M.B.E., a well-known businessman of Palmerston North who served on the City Council for several terms and was for eight years President of the Municipal Electrical Supply Authorities' Association.

T. A. de Cleene, a well-known Palmerston North barrister and solicitor, was on the Board for one year. He was replaced by M. T. Dearsly, M.B.E., J.P., who was Chairman of the P.N. City Council Electricity Committee and is well known in education circles as Chairman of the High Schools Board of Governors and Deputy Chairman of the Wanganui Education Board, and also The Boys' Brigade. Mr. Dearsly is still a member.

When Mr. N. J. Short relinquished the seat allocated to the Kiwitea County after 21 years, R. L. Meads, J.P., of Waituna West, was elected unopposed. He is a returned serviceman and a well-known farmer of Waituna West. M. Green, M.B.E., a farmer at Stanway and present chairman of the Oroua County Council, came on to the Board at the same time as P. M. Tarrant who represents the Manawatu County. Mr. Green is also chairman of the Manawatu Regional Development Association.

At the 1968 local body elections A. E. Gracie was elected to represent Feilding Borough. Mr. Gracie, a Feilding retailer, served in the Middle East during the war and has also been a member of the Feilding Borough Council and the Manawatu Catchment Board. But his great love is the Dolphin swimming club in Feilding and he has been responsible for the raising of a considerable sum of money for the new Makino swimming pool. At the same poll Mr. C. G. Hubbard, another member of the legal profession in Palmerston North, was elected. Mr. Hubbard also served for a short period as Coroner for the city and is still a member of the Board.

The local body elections in 1971 were notable to the Board for the fact that

Mr. Hopcroft, deputy chairman, retired after 28 years' service. During this period he was chairman for the period from 1958 to 1964 and was deputy chairman from 1956 to 1958 and 1965 to 1971 — a truly great service. V. D. Fraser, a farmer of Linton, was elected to fill the vacancy on the Board. Upon the death of Mr. Fraser in 1972, Mr. R. M. Collis was appointed to fill the vacancy.

12

TODAY'S BOARD

Palmerston North city is totally surrounded by the Manawatu-Oroua Electric Power Board and any expansion of the built-up area is of necessity into a "Foreign State".

Many of the large industrial, manufacturing and constructions firms have built or are building premises or factories on land that is in the expanded area of the city but in the Board's area of supply. This does not sweeten the minds of the City Fathers who for many years have made a bone of contention of the supply position in Boundary Road, or Tremaine Avenue as it is now called.

For many years there have been arguments as to how the city should be supplied and even today, with amalgamation rearing its head, the arguments continue. With the expansion of the city boundary into the Board's area the City Fathers consider they should have this portion of the city in their area of supply.

With the Board policy of underground reticulation both high and low tension have been undertaken in these new areas of the city, particularly in Awapuni, Milson and Takaro. This policy of undergrounding all reticulation in these areas was first implemented in 1964 and since then one gang has been engaged continuously on this work. So it could truthfully be said that the Board is subsidising the city to the extent of one line gang.

The street lighting in these new areas is all double-tube fluorescent, mounted on 21 ft standards manufactured in the pole factory at Feilding, or sodium vapour on prestressed spun concrete poles.

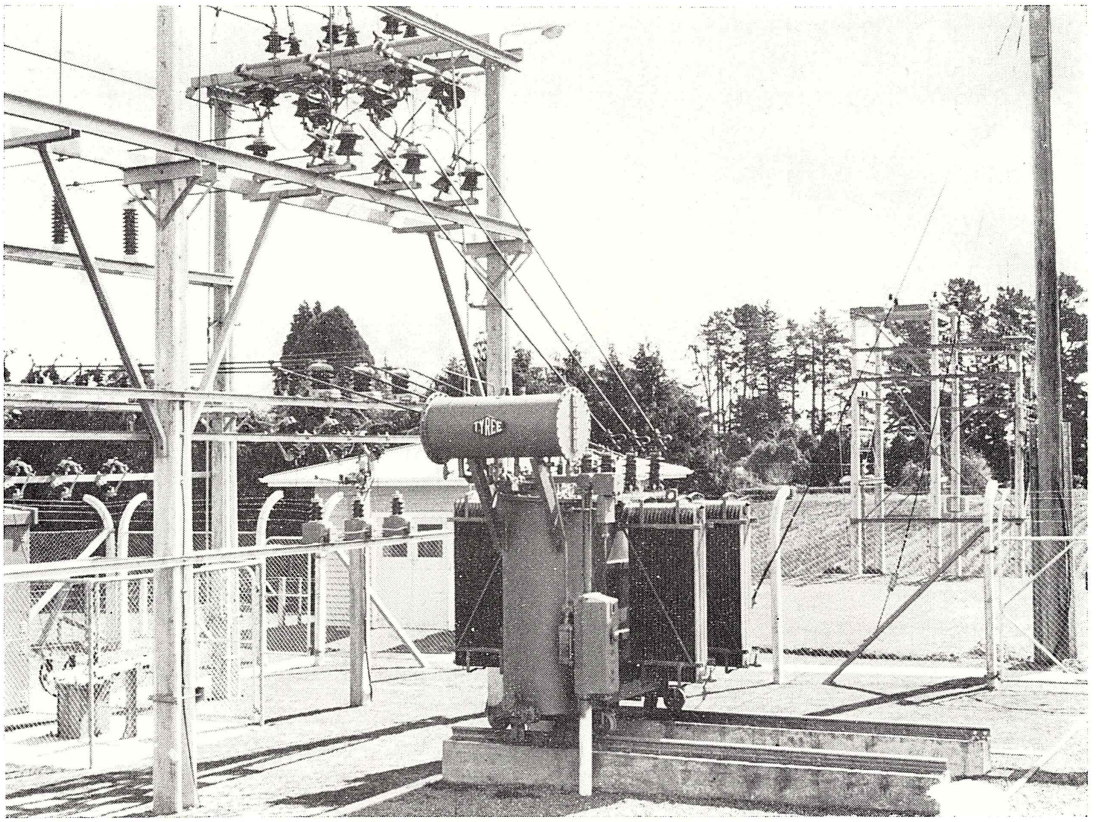
The Board is fortunate in the fact that its area contains several large consumers. Excluding Palmerston North city which is a supply authority in its own right and buys its power in bulk from the Board, the largest consumers are the two freezing works sited at Longburn and Feilding. Next come Ohakea Air Force Station and Massey University.

The Board's peak demand in 1970 was 70,114 kW. By July 1972 the peak had risen to 72,665 kW.

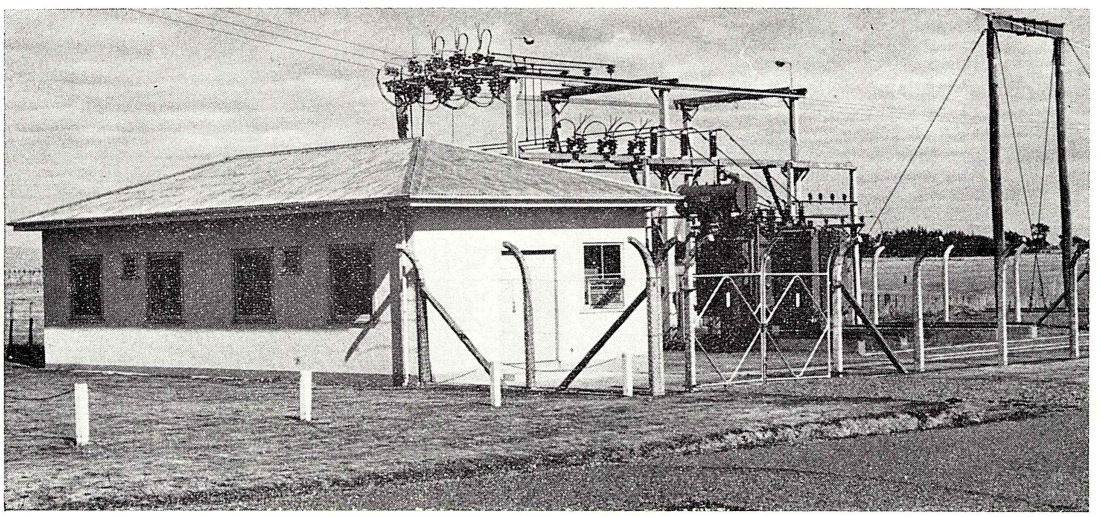
A small industrial outpost in the Kakariki area has an interesting history. After the 1914-18 war, farmers in the area formed themselves into a company and built a meat freezing works on land adjacent to the Rangitikei River. In the Board's early years its engineer had run a fairly heavy 11 kV line to a point about two miles from their works. When the line had progressed to this point the works folded. The line then became part of the ring feed to Sanson

One of the original totara poles in Feilding Borough, installed in 1914, is pictured being removed in 1970.

A hole digger, with boom for lifting lighter-type poles.

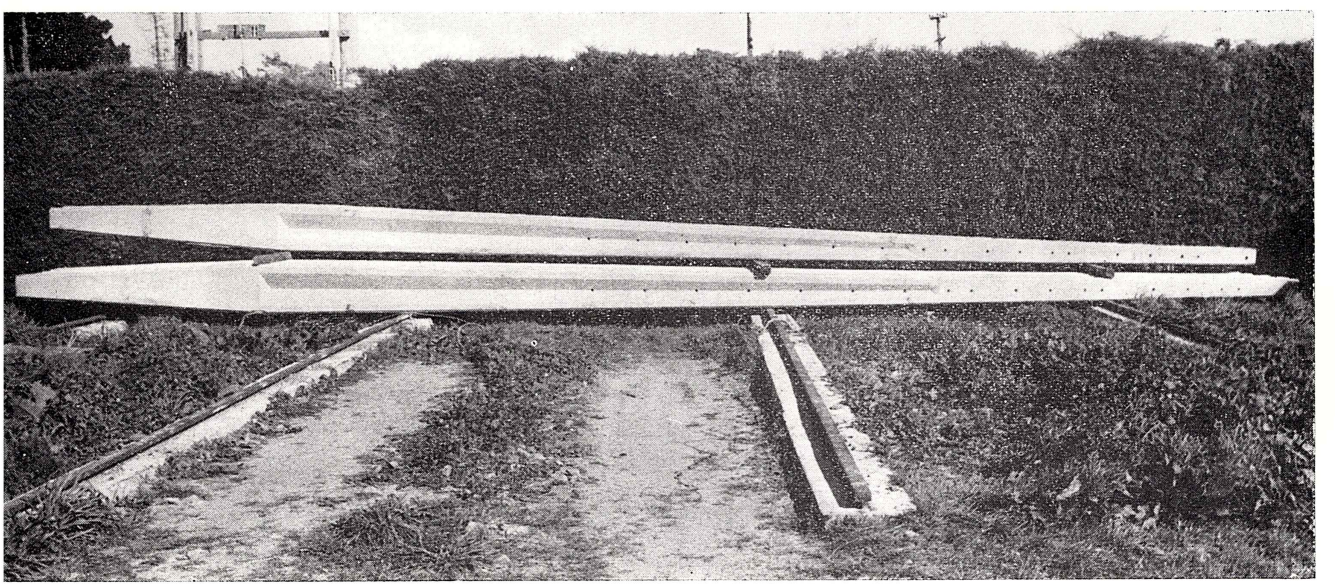


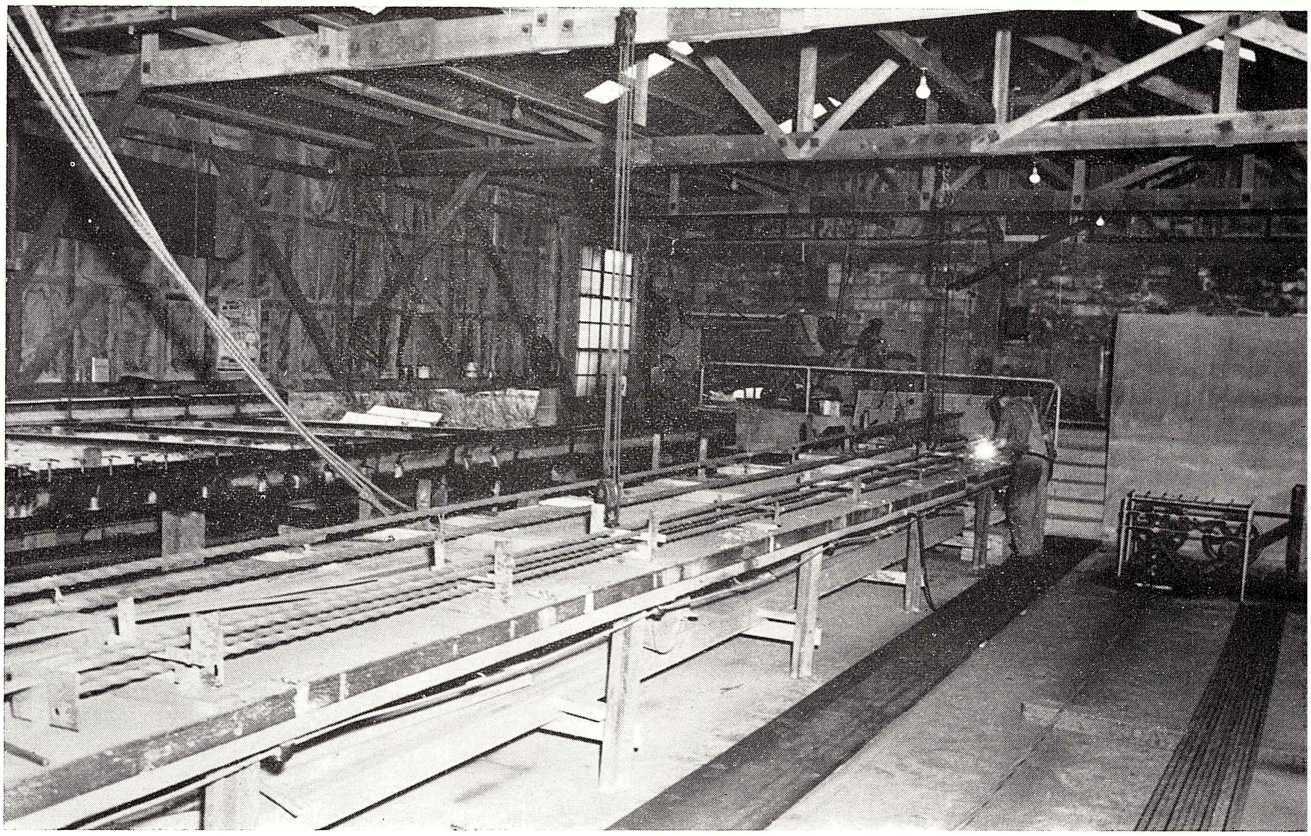
The Kimbolton 33-11 KV substation.

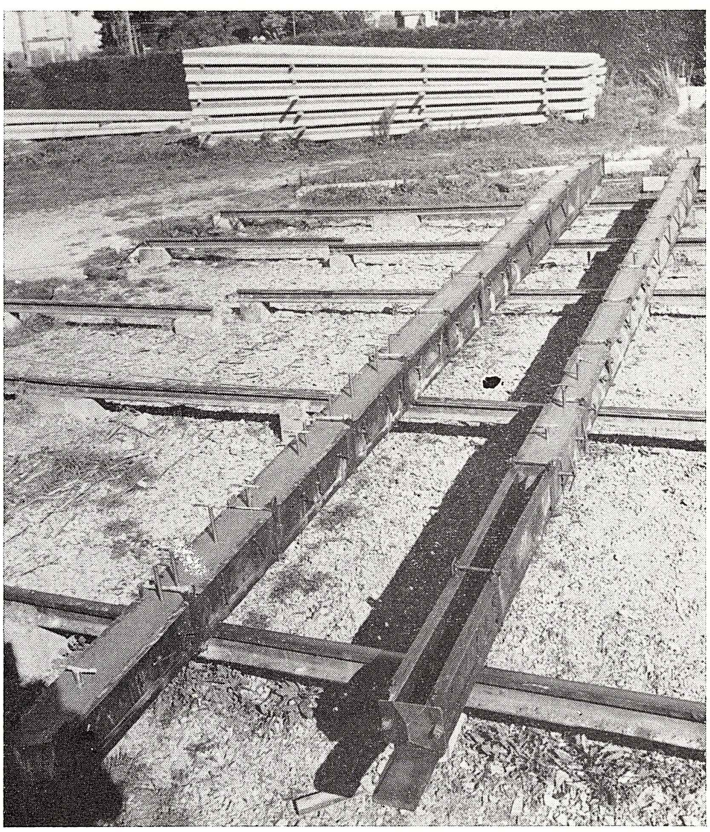


The Sanson 33-11 KV substation.

Cured poles are being tested on the right. Below, the concrete poles are stacked for curing.



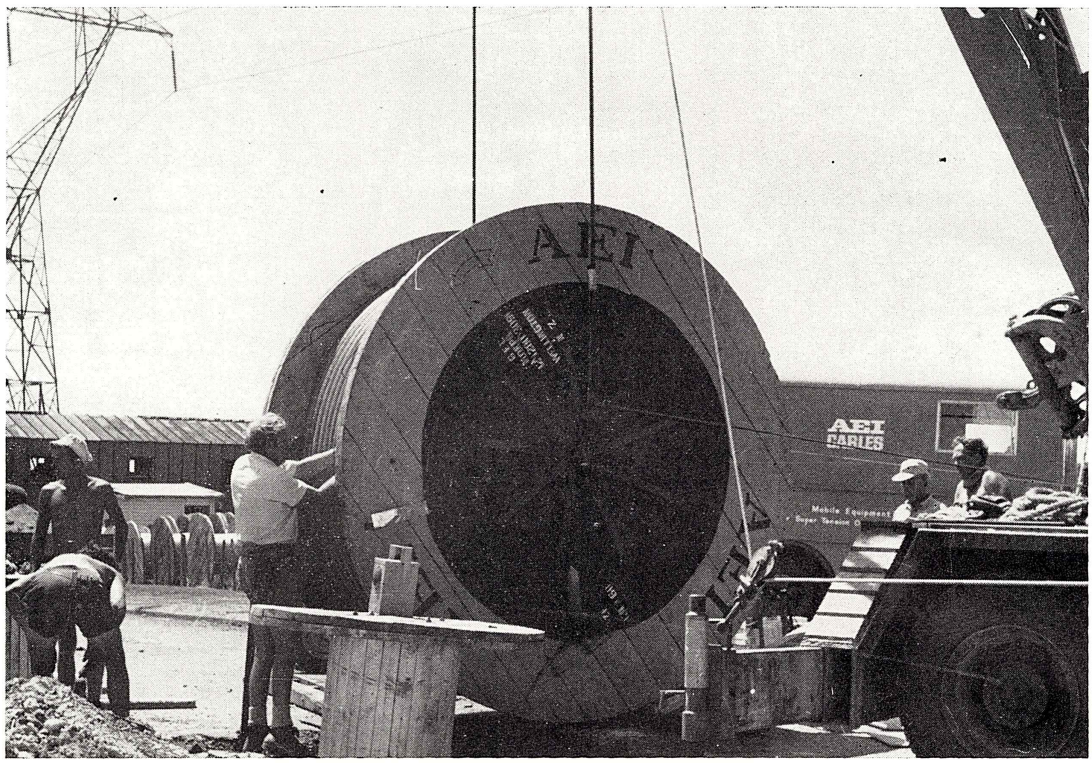




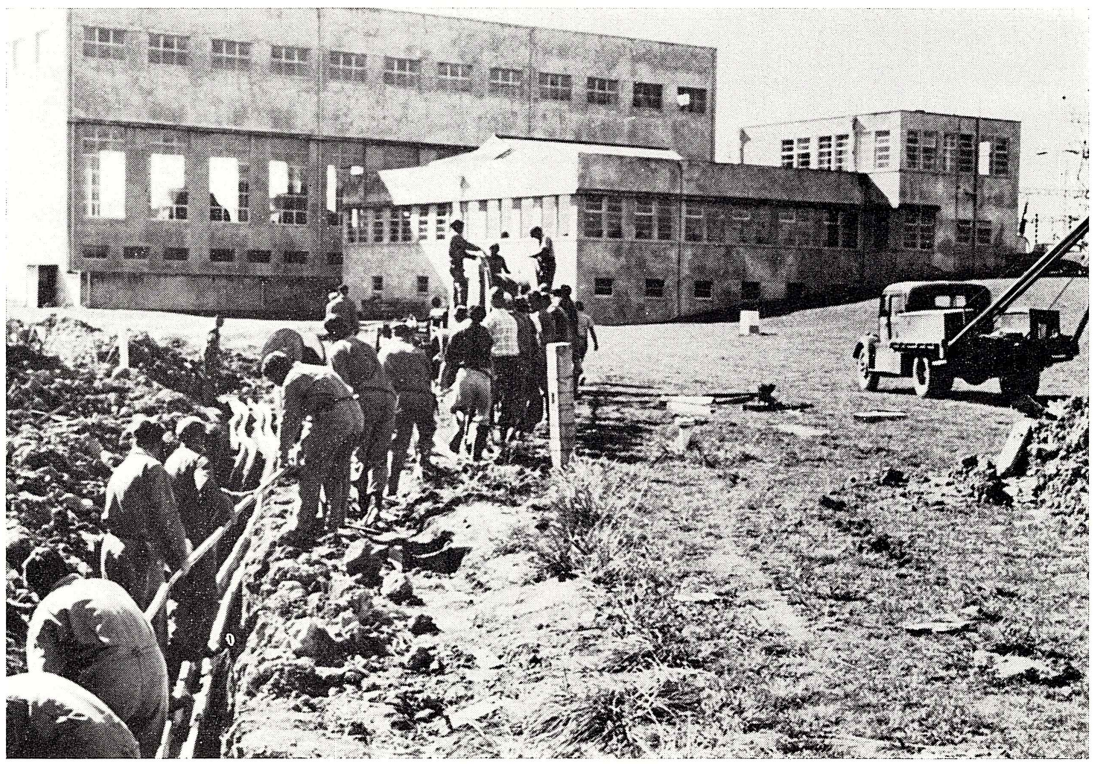
Pole reinforcing is seen above in the interior of the Feilding pole factory. The poles are pictured after running on the drying skids.

Stacking 25ft. heavy poles in the yard.

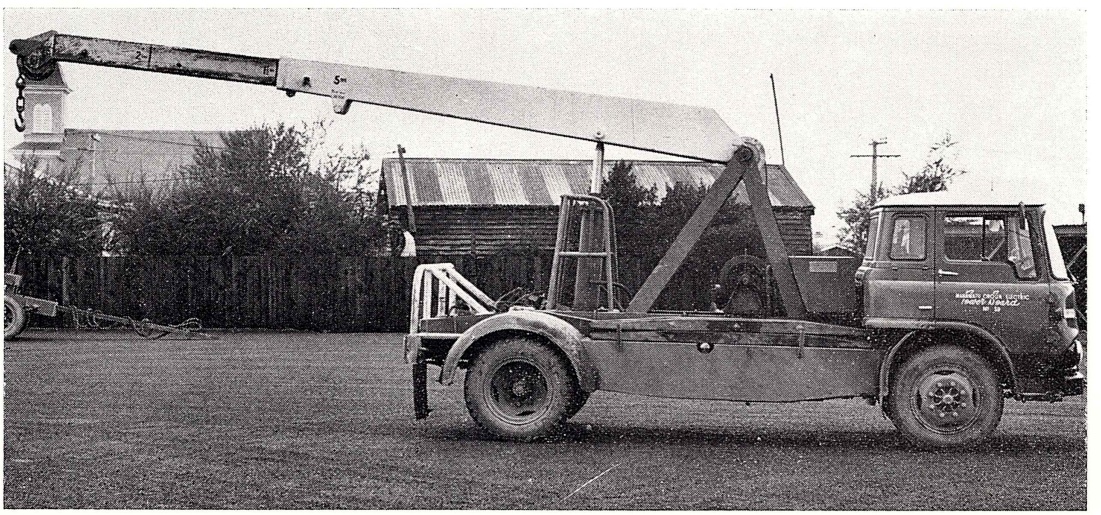
Massey University is the Board's fourth-biggest consumer, coming after the two freezing works and Ohakea Air Force Station.



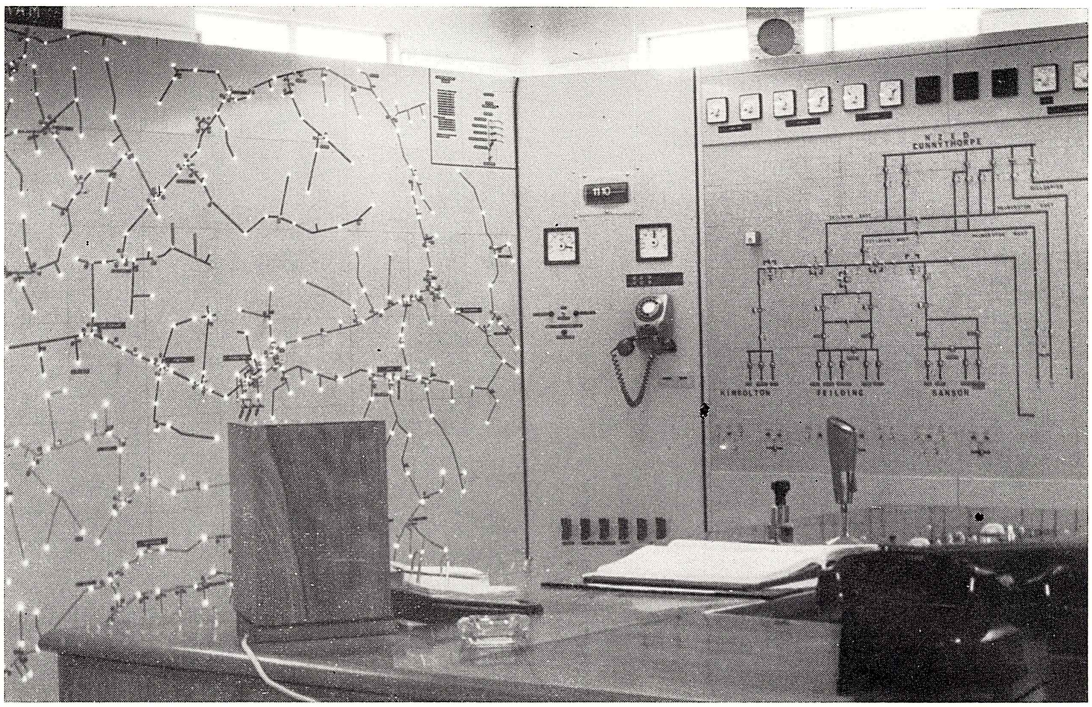
The drum pictured above holds 33 KV 0.6 oil filled cable. Below, workmen are laying 33 KV cable.



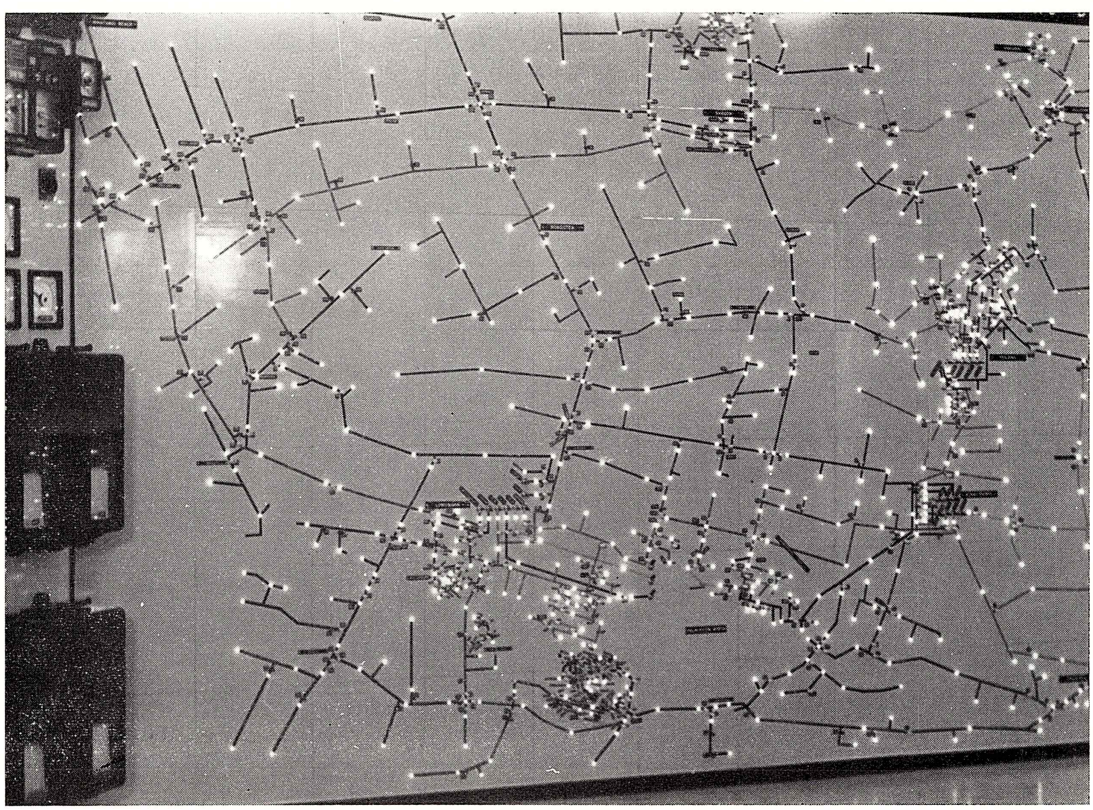
The light Hiab truck is fitted with a bucket for maintenance work.



This heavy Hiab is used on concrete pole erection line work.



Interior of the Bunnythorpe substation, showing the 11 KV mimic diagrams, 33 KV layout and operator's desk with rhythmatic control board and radio and phone sets.



and Halcombe. The 1939-45 war saw the old works commissioned as a freezer, using material from the stranded ship "Port Bowen". After World War II, a large manufacturing concern purchased the building and converted it into a wool scouring works. It also had a slipper manufacturing section. Over recent years the load has grown substantially with the addition of wool spinning machinery and subsidiary plant. So this little outpost of the Board now has a major industrial look, although the slipper section of the firm has gone. A large metal crushing plant and a 1,000,000 gallon tar storage tank are also all within a radius of a quarter of a mile.

With the advent of underground work on a fairly large scale two small trenching machines were purchased, and also a larger tractor type digger for the heavier work. A 30 cwt Hiab with a cherry picker bucket has proved extremely useful on street light maintenance and for special pole-top work. A six-ton Hiab without the bucket is also being used. These machines are very versatile and are in constant demand. Other mechanical aids, such as chainsaws, mechanical rammers, mobile concrete mixers and additional small lighting plants, have also been purchased and at the Feilding garage the mechanics repair bays have been completely upgraded. The Board employs a carpenter and his workshop contains some fine woodworking plant and tools.

It was the Board's policy to carry out all vehicle maintenance in its own workshop at Feilding and with the growth of the fleet the workshops in the old Feilding power-house buildings were becoming far too small. It therefore let a contract in November 1971 for new workshops situated in Eyre Street on land purchased for such a purpose several years earlier.

The Board does not run a contracting department but has a roster system and members of the Electrical Contractors' Association carry out any necessary installation work for appliances sold from the Board's showroom,

It is now the policy to underground reticulation in all new streets, at charges of $10.50 a section for low-tension extensions and of $18.50 if high tension has to be run and a transformer installed. The Board has developed in its workshop a standard type of cubicle substation, but at present it is experimenting with a sunken type of substation. The original low-tension reticulation was undertaken in Feilding Borough in 1960 and the charge to the developer was half the extra cost above normal overhead reticulation. The policy was later changed to a charge per section.

The first part of the Palmerston North city within the Board's area of supply to have underground reticulation was a private subdivision in the Melford Road area at Awapuni. That was in 1962, and later certain land developers asked for underground supply in both Palmerston North and Feilding. In 1964 it was decided that all new built-up areas would have underground reticulation.

The first underground low tension in Feilding was in steel armoured cable which was brought up at every second section boundary into a surface-mounted fuse box with service fuses for the houses and hot water and street lighting

relays. Later on the assumption that an underground supply should have everything underground, the armoured cable reticulation was replaced with four single double-insulated 19/101 aluminium wires laid in $3\frac{1}{4}$ inch ducting with a concrete box level with the surface of the ground at every other section boundary. In this box the joint, in a grease-filled, watertight plastic bag, is made to the soft drawn concentric service cable that terminates in a fuse box on the exterior wall of the house. The only above-ground boxes in these areas are for sectionalising fuses and switches.

The Board's 33 kV system, with 33/11 kV substations at selected points, is expected to be able to handle all the load in the forseeable future. In view of the possibility of amalgamation with other supply authorities, it may eventually be necessary to transmit at 110 kV to different points, but time alone will answer this.

APPENDICES

APPENDIX I

THE BOARD'S GROWTH

The following tables show the growth of the Board.

TABLE A

	Revenue $	*Max. Demand* M.W.	*Consumers*	*Ranges*	*Water Heaters*	*Milk Motors*
1925	17,822	1.2	2492	0	80	NA
1928	120,620	2	4116	379	775	609
1930	132,328	3.5	4368	653	1200	835
1940	245,636	8	5811	1389	2204	1415
1950	422,026	14	7071	2872	3809	1897
1960	1336,096	31	11,914	6404	7274	2144
1965	2083,380	47	13,822	8422	9393	2075
1970	3431,806	70	15,352	10,354	11,578	2022
1971	3628,790	70	15,669	10,737	12,219	2018
1972	3832,205	70	15,967	11,113	12,677	2021

Milking motors are now showing a gradual decline in numbers.

TABLE B

	Staff	*Vehicles*	*Mileage*
1925	42	12	NA
1928	59	16	137,327
1930	78	18	156,179
1940	*68	22	218,316
1950	75	25	243,056
1960	114	44	388,604
1965	141	59	510,997
1970	147	67	646,129
1971	136	69	644,857
1972	135	68	630,667

*In 1940-45, 20 members of the staff were on active service.

TABLE C

	Night Store Heaters	*Units sold per customer*
1965	86	7795
1966	321	8511
1967	354	8949
1968	668	9162
1969	982	9862
1970	1261	10,046
1971	1587	10,306
1972	1984	10,624

TABLE D

	Salary and Wages
1925	$ 35,600
1928	31,572
1930	35,318
1940	37,827
1950	61,540
1960	187,358
1967	383,060
1968	415,538
1969	432,211
1970	450,058
1971	493,402
1972	553,992

TABLE E

	Units purchased in millions	*Maximum Demand*
1925	1	1306
1928	11	2901
1930	20	3745
1940	45	9654
1950	79	15,525
1960	162	31,035
1967	269	60,113
1968	278	60,316
1969	298	64,456
1970	310	69,744
1971	322	70,114
1972	336	72,665

APPENDIX II

NET RESULTS

The following table sets out the Board's net results for the past six years.

1967	$ 7,460	surplus
1968	179,431	surplus
1969	125,999	surplus
1970	30,825	deficit
1971	54,343	surplus
1972	7,322	surplus

APPENDIX III

LARGER CONSUMERS

The following table gives the kVA demands of the Board's larger consumers for 1971.

City Council	35,880
Borthwicks	3,167
C.W.S. Longburn	2,418
Ohakea	1,608
Massey University	1,410
Grasslands & D.S.I,R.	1,029
Longburn Milk Factory	890
Linton Camp	852
F. & T. Wools	586
Coulls Somerville	466
Wools Scours	408
Radio Himatangi	397

There are other numerous consumers using 200 and 100 kVA.

APPENDIX IV

BOARD CHAIRMEN

J. A. Nash, C.B.E.	1922-1932
D. McElroy	1932-1933
C. G. C. Dermer	1933-1937
J. Boyce	1937-1952
W. McKay	1952-1958
W. R. Hopcroft, M.B.E., J.P.	1958-1964
R. G. Linklater, A.F.C., J.P.	1964-

APPENDIX V

BOARD MEMBERS

J. A. Nash	1922-1952	W. R. Hopcroft	1943-1971
S. R. Lancaster	1922-1925	W. S. Page	1944-1953
P. J. Small	1922-1932	W. H. Brown	1944-1967
Sir James Wilson	1922-1929	N. J. Short	1944-1965
H. H. Hunt	1922-1932	D. H. McInness	1947-1955
J. Linklater	1922-1932	A. S. Dawick	1950-1956
M. A. Eliott	1922-1944	J. K. Scott	1952-1959
G. J. Harford	1922-1922	V. B. Short	1953-1968
L. T. McLean	1922-1932	R. Craig	1953-1956
J. Morrison	1922-1926	P. O. Skoglund	1955-1958
J. H. Vincent	1922-1927	R. J. Cleland	1955-1956
F. Arbon	1922-1928	B. Henderson	1956-1957
J. S. Tingey	1922-1929	R. G. Linklater	1956-
J. Hodgens	1925-1941	W. V. Shannon	1956-1959
	1947-1955	J. Q. Cameron	1956-
O. McElroy	1926-1935	H. Hamlin	1957-1965
A. Campbell	1927-1932	J. A. Colquhoun	1958-1959
F. J. Roberts	1928-1932	E. W. Burson	1959-1965
J. H. Perrett	1929-1932	R. P. Morgan	1959-1962
P. G. Guy	1929-1947	M. W. Waters	1959-
J. Batchelar	1932-1935	J. H. Cowan	1960-
	1941-1943	H. A. Bodell	1962-1965
E. O. Bond	1932-1938	C. W. Teppett	1965-
W. P. Bickers	1932-1944	T. A. de Cleene	1965-1966
W. McKay	1932-1950	R. L. Meads	1965-
N. Campbell	1932-1950	M. Green	1965-
J. Boyce	1932-1953	P. M. Tarrant	1965-
C. G. C. Dermer	1932-1944	M. T. Dearsly	1966-
J. H. Mason	1935-1965	C. G. Hubbard	1968-
W. G. Shannon	1935-1941	A. E. Gracie	1968-
L. A. Hogg	1938-1956	V. D. Fraser	1971-1972
J. T. Heatley	1941-1947	R. M. Collis	1972-

APPENDIX VI

EXECUTIVE OFFICERS

K. W. Eglinton	Managing Secretary	1922-1958
E. W. Charles	Managing Secretary	1958-1966
	General Manager	1966-1970
A. T. Spain	Secretary	1966-1970
	Managing Secretary	1970-
W. A. Waters	Chief Engineer	1922-1945
T. Donaldson	Chief Engineer	1945-1957
M. D. Macphee	Chief Engineer	1957-

APPENDIX VII

LONG-SERVING STAFF MEMBERS

Past members of the staff who worked for the Board for 25 years or longer.

	Period	
Name	*From*	*To*
E. Bassett	1938	1964
E. L. Bowater	1936	1965
H. H. G. Bowler	1923	1963
E. W. Charles	1930	1971
J. W. Clevely	1923	1971
A. Costall	1937	1966
T. Donaldson	1923	1957
K. W. Eglinton	1922	1958
I. D. Funnell	1932	1964
J. P. Laing	1935	1966
Miss I. I. Mayo	1926	1961
F. W. Poole	1924	1972
F. Powell	1924	1969
J. W. Priest	1936	1963
J. F. Shaw	1938	1972
C. H. Stevens	1939	1968
J. M. Townsley	1936	1971
Miss G. A. Young	1922	1961

Present members of the staff who have worked for the Board 25 years or longer.

Name	*Commenced*
E. F. C. Bainbridge	1941
E. C. Caske	1939
M. D. H. Cooke	1945
W. G. Fowles	1947
J. E. Guard	1945
I. F. Hemmingsen	1947
H. A. Parsonage	1942
W. R. Pearson	1938
J. G. Sievert	1947
A. R. Treleaven	1946
N. H. Winter	1939